

LEARNING ON THE RUN... OR FINDING THEIR OWN PATH?

A Multimodal and Longitudinal Study of Motion Events in L2 Dutch

Thèse présentée par **Christina Piot**
en vue de l'obtention des titres de
Docteur en Langues, lettres et traductologie (Université de Liège)
Docteur en Sciences du Langage (Université de Lille)

sous la direction de
Julien Perrez (Université de Liège)
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Année académique 2025-2026

Université de Liège & Université de Lille
Ecole Doctorale ED3bis : Langues, Lettres & Traductologie &
Ecole Doctorale Sciences de l'Homme et de la Société, Lille Nord de France
Lilith & Savoirs, Textes, Langage (UMR 8163)

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Thèse soutenue le 23 janvier 2026 à l'Université de Liège en vue de
l'obtention des grades de **Docteur en Langues, lettres et traductologie**
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**"Whatever you do in life will be insignificant, but it is very important
that you do it, because nobody else will."**

***Remember me* (2010) inspired by Mahatma Gandhi**

ACKNOWLEDGMENTS

A few months ago, I came across a Facebook post that said “you are the actual product of the PhD, not the thesis” and I could not agree more. The PhD is not only the few hundred pages you have in your hands, but also, first and foremost, almost six years of my life. Therefore, while I acknowledge it is somewhat unconventional, I intend to express my gratitude first in person to everyone who has contributed to the completion of this thesis and particularly to the person I am today. In the meantime, I wish to express my gratitude to the schools that allowed me to collect data even during the pandemic and especially the CLIL school where I had to go multiple times over three years to collect the longitudinal data. I would also like to acknowledge the University of Liège and the F.R.S.-FNRS for funding my research and without whom this thesis would have never seen the light of the day. I am also grateful to my supervisors for their guidance throughout the years and to Gale Stam for being part of my thesis committee and for her precious advice. Finally, I would like to express my appreciation for your acceptance to serve on the examination committee and for the time you will dedicate to evaluating my work.

Speech given at the defense:

First of all, I would like to thank the jury members for the time they dedicated to my work, their comments, suggestions and today's discussion. Special thanks to Gale for being part of my thesis committee as well. I remember the first time that I presented my research in front of you as if it were yesterday. It was at iGesto back in 2022. I was so thrilled when I saw you had emailed me after my presentation! Since that year, you've also been part of my thesis committee, and I would like to thank you for that. Even though our meetings were very early for you in the morning, you were always the first one to show up. Thank you for your kindness, enthusiasm, trust, advice and feedback. I'm very happy that I got the chance to meet you in person and spend time with you in Nijmegen. Un merci particulier à Germain aussi d'avoir présidé la défense mais aussi et surtout de m'avoir transmis sa passion pour l'enseignement lors des cours de didactiques disciplinaires.

Un tout grand merci à toutes les personnes présentes aujourd'hui, aussi bien dans l'amphi qu'en ligne et une pensée à toutes les personnes qui auraient souhaité venir mais pour des

raisons diverses et variées n'ont pas pu. Un tout grand merci aussi à Raf et Martine pour leur aide avec la logistique, à Mike pour la technique et à ma copine pour la préparation du drink.

Je souhaite aussi remercier tou·tes les participant·es ainsi que leurs parents et les directions des écoles sans qui ce travail n'aurait pas été possible. Collecter des données en plein COVID n'est pas simple et n'est certainement pas une expérience que je recommande mais n'ayant pas eu le choix, je remercie les écoles de m'avoir donné ces opportunités et en particulier l'école en immersion où j'ai dû me rendre de nombreuses fois afin de compléter les collectes.

Je remercie également l'Université de Liège et le FNRS d'avoir financé mes recherches et donc rendu cette thèse possible.

Il y a quelques mois, très probablement à un moment fort opportun, je suis tombée sur un post qui disait "you're the actual product of the PhD, not the thesis" et je pense que rien n'aurait pu être plus vrai. C'est aussi pour ça qu'aujourd'hui je tiens à remercier toutes les personnes qui ont croisé mon chemin et y ont laissé leur empreinte.

La thèse, c'est comme un marathon.

Mais tout d'abord, avant que même l'idée d'un marathon puisse effleurer l'esprit, il faut apprendre à courir et surtout aimer courir. Pour cela, je remercie mes parents de m'avoir donné le goût de l'école et d'y avoir attaché de l'importance. Plus particulièrement, je remercie ma maman qui m'a toujours poussée à donner le meilleur de moi-même en n'étant satisfaite que des résultats les plus proches du maximum. Ce perfectionnisme peut certes avoir des revers comme j'ai pu l'expérimenter durant la thèse mais il a aussi contribué à m'amener là où je suis aujourd'hui.

Je remercie aussi toutes les personnes qui ont contribué à ce que je réussisse les 3, 7 et 15km et en particulier les enseignant·es qui ont partagé leur passion, notamment pour les langues. J'ai une pensée aussi pour la psychologue du centre PMS de l'Air Pur qui m'a conseillé de ne pas étudier les langues car pour moi c'était une passion mais que le côté « discipline » n'irait pas. Comme quoi, il faut toujours suivre sa propre intuition.

Est ensuite arrivé le "semi-marathon" : les études en langues et lettres germaniques. Je souhaite remercier l'ensemble des professeur·es pour toutes les connaissances et compétences que j'ai pu acquérir durant mes études. Une fois de plus, j'aimerais remercier ma famille pour leur patience, notamment pendant tous les blocus et périodes d'études où le silence régnait dans la maison. J'ai aussi une pensée particulière pour Pascal qui a passé des dizaines d'heures avec un casque pour ne pas me distraire. Je remercie aussi toutes les personnes qui ont fait partie de cette aventure et en particulier Kathleen et Pauline pour toutes ces années et les voyages qu'on a pu faire. Kathleen aussi pour les nombreuses heures d'études réalisées ensemble, les blocus « all-in » pour lesquels je remercie aussi ta maman. Merci à Aline, Mathilde, Camille, Anamaria, Clara, Sophie et Rose.

Et enfin, le fameux marathon: ponctué de sprints, de périodes plus calmes mais aussi parfois de trébuchements, de chutes plus ou moins graves. Courir un marathon c'est apprendre à se relever, à se dépasser, à aller chercher la force au fond de soi, à ne pas perdre de vue la ligne d'arrivée et à se rappeler des raisons pour lesquelles on a entamé cette course. Mais dans ce cas bien précis, un marathon ne se court pas seul. Il y a d'abord les supporters: famille et les ami·es qui ne se demandent parfois quelle idée nous passe par la tête. Bedankt Mario om het thema van mijn doctoraat zo interessant als het seksleven van mieren in de 17de eeuw te vinden. Maar toch voegde je toen daaraan toe dat je toch overtuigd werd door mijn enthousiasme. Ik moet wel toegeven dat dit enthousiasme niet altijd intact is gebleven en dat moet eigenlijk ook gezegd worden. Er waren momenten waar ik het gewoon beu was. Maar wat ik altijd zeker heb geweten - want ja, ik heb ook van jou geleerd dat je niet moet denken, je moet weten - is dat de vlam die keihard brandde in het begin altijd bij me bleef en gewoon nood had aan een beetje zuurstof. Thank you, Dani & Kevin, for following all my (doctoral) adventures, for believing in me, for encouraging me and for keeping up with all the challenges. Dank je, Alexandra, voor je steun en om altijd zo lief en aanmoedigend te zijn. Merci aussi à toutes les personnes qui m'ont demandé à de nombreuses reprises où en était la thèse, question préférée des doctorant·es évidemment. Je pense notamment à mes parents, ma sœur, ma grand-mère, ma tante Myriam, Alice, Olivier, Kathleen, Pauline, Aline, Mathilde, Anamaria et Camille. Parfois l'innocence est le meilleur remède. Merci à Mehdi, qui sans avoir aucune idée de ce qu'il se passait, a été une source d'énergie. Enfin, si la thèse est bien compliquée pour une autre personne, c'est pour le ou la partenaire du ou de la doctorante. Je remercie

ma copine pour son soutien au quotidien, son amour, sa patience, d'avoir accepté mon absence physique, mentale et parfois même émotionnelle durant les derniers mois qui ont précédé le dépôt. Merci de d'être transformée en Cheffe Inchelin même si ce n'était pas ta vocation première. Merci d'avoir tout fait pour que je puisse me concentrer un maximum sur la thèse, sans quoi je ne serais pas parvenue à terminer dans les temps. Merci aussi pour tous les préparatifs pour aujourd'hui. Merci d'avoir été là. Je me réjouis d'entamer cette nouvelle étape de vie sans thèse en tête à tes côtés.

Il y a ensuite les personnes qu'on rencontre sur le trajet. Merci à Martine & Raf d'avoir toujours été présent-es et pour leur aide pour la logistique d'aujourd'hui. Merci aussi à Martine pour les sans doute trop nombreuses heures de papotage. Passer par ton bureau en arrivant va me manquer ! Merci à Raf de m'avoir permis d'ajouter « Secrétariat du Secrétariat » sur mon CV. Merci d'avoir été le meilleur voisin de bureau et de t'être toujours assuré que je ne manquais de rien. Merci pour les commandes in extremis et merci d'avoir passé des heures à extraire du texte de photo manuellement pour me sauver la mise. Merci à Sarah & Gwen pour toutes les pauses improvisées à discuter et pour les lunches occasionnels à la découverte de nouveaux restos. Bedankt aan An, Dana, Dirk, en Lot voor al de lunches samen. Dana, ook bedankt voor de co-organisatie van de LingTalks. Het was zeer leuk om met jou samen te werken. An, bedankt voor je inzicht en je relevante opmerkingen op verschillende werkstukken. Dirk, bedankt voor je vertrouwen en om een inspirerende onderzoeker te zijn. Ook bedankt voor de leuke studiereizen naar Amsterdam en Antwerpen! Bedankt aan Isa voor de studiereis naar Deventer en aan Elies voor die naar Gent. Ook bedankt aan de medereizigsters Marie V., Marie J. en Kim Sa. Deze teambuildings waren zeker hoogtepunten. Merci aussi à Thérèse et Virginie de l'ARD pour les chouettes formations et à Justin de STL pour m'avoir aidée avec l'administratif lillois. Je remercie aussi les filles de la "box" et en particulier Marie F. et Marie-Anne T. pour leurs précieux éclairages.

À côté de ça, il y a aussi les personnes qui courent leur propre marathon dans d'autres villes et avec qui j'ai partagé la course d'une certaine façon. Tout d'abord Clara, la linguistique nous a mises sur le chemin l'une de l'autre il y a déjà un peu plus de 8 ans et je suis ravie d'avoir pu partager avec toi ces années de thèses et les conférences et formation : de Gand à Nimègue, en passant par New York, Chicago, Barcelone et Lyon, c'est

une chance d'avoir pu partager ça avec une amie. Merci pour ces souvenirs et pour ton soutien. Y luego Paloma. Participé en uno de tus Gesture Meetings por curiosidad sin imaginarme que la organizadora de estos meetings se iba a convertir en mi amiga. Fue un placer ir a ICLC contigo. Te agradezco por tu apoyo estos últimos meses. Gracias por ser mi accountability y writing buddy. Gracias por enseñarme Flown, que, como ya lo sabes, me ayudó un montón y por encima de todo, gracias por todas las sesiones que hicimos juntas.

Et puis il y a les personnes avec qui j'ai couru un bout de chemin. En dehors de Liège, je remercie le Lemmens-gang et en particulier Océane pour son accueil et écoute, au Max Plank Institute for Psycholinguistics, many thanks to the Multimodal Language Department for hosting me. I had the chance to work in a very stimulating environment and be part of a great lab. I also want to thank the Codenames people without whom my research stay would not have been the same. Little did I know that the note I put on the door of the guest house saying "hey if you're on your own as well and looking for friends to hang out with, just text me" would give me such a great group of friends. Thank you for all the parties, trips to Dutch cities, board game nights, dinners etc. Special thanks to Evrim for his support and friendship. It was great to see you and Jane when I came back for ISGS and to feel like I had never left. Un agradecimiento especial a Marina también. J'ai commencé la thèse en plein covid et en plein master en didactique, période un peu particulière pour rencontrer les collègues. Quand je suis revenue au bureau en juin 2020, j'ai constaté que le bâtiment était assez désert... Jusqu'à ce que je rencontre Adélaïde dans un premier et court temps et puis Matthieu. Merci à elleux deux d'avoir facilité ce retour dans ces conditions particulières et merci à Matthieu d'avoir égayé mon été 2020. À tous nos lunches et discussions, nos pauses glaces et mes tests culinaires. Merci aussi pour ta présence et ton amitié depuis. Je remercie aussi Marie V. et Bastien, l'Alliance, pour les années à leurs côtés. Merci pour votre soutien, tous les temps de midi passés ensemble et merci d'avoir transformé le Pépouz en notre QG pendant quelques mois en 2022. I would also like to thank Ann-Sophie, Tim & Dasha. I'm happy to have crossed your path and to have got to know you. Et enfin, un tout grand merci à Éloïse, Léonore, Nicolas, Sarah et Víctor, la team Résidoc. Votre Nonna Piotti ne sait pas comment elle aurait fait pour terminer la thèse sans vous à ses côtés les derniers mois. Merci pour vos encouragements, d'y avoir cru parfois peut-être plus que moi. Merci à Nico et Eloïse d'être venu·es travailler

avec moi et merci à toustes pour les nombreux temps de midi, les Résilunchs, Résidoc, et autres Rési-événements.

À côté de toutes ces personnes au long du chemin, il y a aussi celles que j'aurais dû rencontrer après avoir franchi la ligne d'arrivée. Elles sont cependant arrivées un peu plus tôt que prévu. Un grand merci à l'UER Langues d'HEC pour leur accueil et en particulier à Madeleine, Marie et l'équipe de néerlandais. Ik heb het al meerdere keer gezegd maar ik heb zo veel geluk om zo'n topteam te hebben. Ik ben jullie super dankbaar voor alles wat jullie de laatste maanden hebben gedaan voor mij. Bedankt voor jullie begrip, geduld, en hulp. Het proefschrift afronden naast deze voltijdse baan was zeker onmogelijk geweest zonder jullie. Jullie hebben de overgang veel makkelijker gemaakt en de toekomst kan alleen beter zijn. Ik kijk uit naar alles wat we samen zullen kunnen doen.

Courir un marathon est bien plus facile quand on est accompagné par des coachs expérimentés. Bedankt Maarten voor alle Lemmens-gang meetings en de jaarlijkse bijeenkomst bij jou thuis. Bedankt ook voor je advies en inzichten. And last but certainly not least... Julien. Nous sommes le 19 septembre 2014 à 15h, salle Gothot. Premier cours d'Introduction à la Linguistique Générale. Je dois avouer qu'à ce moment-là, je ne savais même pas ce qu'était la linguistique et pourtant, rien que la table des matières du cours m'a emballée et en particulier les deux derniers chapitres « acquisition des langues » et « apprentissage des langues étrangères ». Je pensais, naïvement, qu'on savait tout sur le sujet et finalement, heureusement que je me suis trompée. Ce cours a été une révélation, à tel point que j'aurais aimé un examen oral. Quel·le étudiant·e de bloc 1 souhaiterait un examen oral ? C'est donc avec beaucoup d'enthousiasme que j'ai choisi la mineure en linguistique et que j'ai découvert les cours de linguistiques néerlandaises et anglaises. Arrivée en bac 3, c'est tout naturellement que je t'ai fait part de mon souhait de faire le TFB sous ta supervision. Je me souviens que tu m'as dit que tu étais content de travailler avec moi. Bien que ça m'ait fait plaisir sur le moment, j'étais assez étonnée. Tu voyais sûrement déjà quelque chose que je ne soupçonnais même pas. Ce premier travail fut concluant bien que le chemin était un peu « semé d'embûches » (le terme est un peu fort j'en conviens) : entre toi qui avais demandé à une autre étudiante si elle avait de mes nouvelles car tu n'en avais pas eu du tout au premier quadri (oups), moi qui t'envoie mon plan toute contente à Pâques pour recevoir un mail automatique que tu es en vacances

(re-oups) et toi qui me demandes lors de la dernière semaine de cours si tu dois encore faire quelque chose pour moi, euh oui ? Relire tout le travail ? C'est donc parti pour le master mais quel master ? Début d'années plein de doutes, je viens te voir après un cours de sémantique pour te demander ton avis avec l'idée que tu es le prof qui me connais le mieux. Approfondi puis didactique ou didactique puis commu multilingue ? Pour toi c'est assez clair : approfondi puis didactique mais, tu comprends que ta position est plus facile que la mienne. C'est la première fois où le mot « doctorat » sera prononcé. Dans un souci d'honnêteté, tu me dis directement que le master approfondi me permettrait de faire quelque chose que j'aime pendant deux ans mais que rien n'est sûr pour la suite. C'est donc parti pour deux ans de master approfondi et pour un TFE en linguistique néerlandaise. Un premier sujet qui n'aura finalement pas vu le jour suite à une séance de cours où tu as suggéré aux étudiant·es de master 1 ou aux étudiant·es de master 2 en retard de faire un TFE sur les gestes co-verbaux et le domaine de l'espace. Sur une échelle de 1 à 10, je me suis sentie visée à... 10 et je pense qu'on peut dire que cela a tout changé. Cette même année, tu m'as aidée, ainsi qu'An, à postuler à l'UNamur pour un poste d'assistante en néerlandais. Malgré le fait que tu trouvais dommage la possibilité que je m'en aille, tu as fait le maximum pour m'aider à préparer ma candidature et mon entretien au mieux. Je n'obtiens finalement pas le poste, notamment parce que mon sujet de recherche est très éloigné de la recherche faite au sein du laboratoire namurois. Mon premier sujet de TFE était lui, en parfait alignement avec ce qui se fait à l'UNamur. Serait-ce le destin ? Le TFE suit son cours, tu réponds toujours présent et tu m'accompagnes au mieux pour me donner les moyens de déposer une demande de bourse par la suite.

Nous sommes le 9 octobre 2019, jour de la cérémonie des diplômes. C'est la première fois que je te revois depuis que tu m'as dit que je pouvais te tutoyer et cela me semble tout simplement impossible. Ce jour-là je t'avoue que je crains que le délai soit trop court pour introduire le dossier BSH cette année mais tu es persuadé du contraire. Tu m'encourages à t'envoyer ce que j'ai déjà écrit pour que tu puisses me donner un premier retour. Peu de temps après, nous avons rendez-vous pour finaliser le dossier ensemble. Après la défense de Kevin N., tu me dis qu'un jour je serai à sa place. Assez difficile à croire sur le moment où les résultats de l'appel pour la Bourse en Sciences Humaines ne sont pas encore tombés mais... force est de constater que tu avais raison. C'est au cours de didactique des langues modernes, en regardant si j'avais reçu mon lieu de stage, que j'ai vu le mail qui m'annonçait

que j'avais obtenu la bourse. Tu m'avais tellement bien préparée à l'idée qu'il était très difficile d'obtenir une bourse du premier coup que je ne m'y attendais pas du tout.

Dans les remerciements de mon TFE, j'écrivais: De academische zijde van de zaak is zeker belangrijk maar ik wil vooral Prof. Perrez bedanken voor zijn enthousiasme, zijn optimisme en zijn aanmoedigingen. Quel plaisir pour moi aujourd'hui, 6 ans plus tard, de pouvoir réitérer ces propos. Bien sûr, je te remercie pour tes relectures, tes commentaires et pour les heures que tu as passées avec moi à coder des gestes. Merci pour toutes les réunions qu'on a eues et qui m'ont reboostées à chaque fois. La thèse n'aurait pas été ce qu'elle est sans toi. Merci aussi pour la collaboration sur le projet de *foreigner talk* et pour les présentations qu'on a eu l'occasion de faire ensemble lors de colloques. Mais ce que je retiendrai surtout de ces six (voire onze) années et ce pour quoi je tiens aussi à te remercier c'est pour ton accompagnement sur le plan humain. Merci pour ta disponibilité, merci d'avoir toujours répondu présent quand j'avais un problème et d'avoir toujours dégagé du temps. Merci pour la confiance et la liberté que tu m'as données. Merci de m'avoir laissé profiter un maximum de ces années pour découvrir un maximum de choses même si ça a parfois voire souvent été au détriment de l'avancement de la thèse. Merci de m'avoir laissé faire mon chemin. Merci d'avoir toujours mis mes intérêts professionnels avant les tiens. Merci pour ton écoute, ta compréhension et ta bienveillance. Merci d'avoir toujours cru en moi-même dans les moments les plus critiques. Merci aussi pour ton optimisme éternel et ta capacité hors-norme à relativiser et ce peu importe la situation. J'ai appris énormément de choses sous ta supervision et qui à mes yeux sont bien plus importantes que comment faire de la recherche et j'espère parvenir à emmener tout ça et le mettre à profit à HEC. Et pour ça, tu as toute ma gratitude.

Et si jamais vous vous posiez la question,

oui,

cette métaphore était bel et bien délibérée.

Après 11 ans presque et demi, autrement dit plus d'un tiers de ma vie (et oui les calculs sont bons, Nicolas et Víctor), dans les bâtiments du 20 août, ce n'est pas une page qui se tourne pour moi aujourd'hui mais plutôt un livre qui se referme. Et quel livre ! Je terminerai donc sur deux citations qui résument assez bien mon sentiment :

“Don’t cry because it’s over, smile because it happened.” Dr Seuss

“How lucky am I to have something that makes saying goodbye [or see you later] so hard.” Winnie the Pooh

ABSTRACT IN ENGLISH

The typological differences between verb-framed (V-framed) and satellite-framed (S-framed) languages identified by Talmy (2000) have also been shown to be reflected in co-speech gestures (e.g., Kita & Özyürek 2003; McNeill & Duncan 2000; Stam 2006, 2010, 2018; Ünal, Mamus & Özyürek 2023). The Interface Hypothesis predicts that the semantic components encoded gesturally (e.g., manner vs. path) will mirror the way information is packaged in speech (Kita & Özyürek 2003). Other studies have found that path gestures align with different linguistic units in V-framed and S-framed languages (e.g., Stam 2006, 2010, 2018). Co-speech gestures should therefore be considered when examining speakers' thinking-for-speaking patterns (e.g., Stam 2018).

Against this background, the present study investigates how motion events are expressed in speech and co-speech gestures by L1 French speakers, L1 Dutch speakers, and CLIL French-speaking learners of Dutch. The study also includes a longitudinal component: the L2 learners repeated the experiment two years later, allowing us to explore whether their thinking-for-speaking patterns changed as their proficiency increased.

An elicitation task was conducted in which 15 L1 French speakers, 14 L1 Dutch speakers, and 12 L2 Dutch speakers recounted scenes from *Tweet Zoo* (1957). Using established taxonomies (e.g., Cadierno & Ruiz 2006; Kopecka 2006; Özçalışkan & Slobin 1999), we identified the semantic components (manner and path) encoded in verbs and satellites. Gestures were categorized as iconic, beat, metaphoric, deictic, or pragmatic (Kendon 2004; McNeill 1992). Iconic and deictic gestures were further analyzed for the motion components they conveyed (e.g., manner, path, ground) and for viewpoint (character vs. observer; McNeill 1992). Finally, we examined combinations of semantic components across speech and gesture, and we analyzed gesture–speech synchronization following Stam (2006).

The results of this study show that even though Dutch-speaking participants focus on manner in their oral descriptions, they tend to produce path gestures only when describing self-propelled movements. These findings contradict the Interface Hypothesis,

which predicted conflated gestures (manner and path together). French-speaking participants tend to focus on path both in speech and in gestures. The gestural differences between the two languages lie in the alignment between gestures and speech: French speakers tend to produce path gestures simultaneously with the verb, whereas Dutch speakers do so at the same time as the satellite. As for the learners, they seem to be aware of the "manner" character of Dutch, but it is difficult for them to express movements like L1 speakers: in fact, complex verbs are very rare in the data, and they do not tend to accumulate semantic components in their speech. At the gestural level, learners have their own behavior: they tend to produce more non-referential gestures (pragmatic and beats) and more referential gestures (here iconic and deictic) per utterance. Learners also produce more manner gestures than L1 speakers. We can thus speak of intergesture just as learners have an interlanguage (Selinker 1972).

RÉSUMÉ EN FRANÇAIS

Les différences typologiques entre les langues à cadre verbal et les langues à cadre satellitaire, identifiées par Talmy (2000), se reflètent également dans les gestes produits en accompagnement de la parole (gestes co-verbaux), comme l'ont montré plusieurs études (par ex. Kita & Özyürek 2003 ; McNeill & Duncan 2000 ; Stam 2006, 2010, 2018 ; Ünal, Mamus & Özyürek 2023). L'Hypothèse de l'Interface prédit que les composantes sémantiques encodées gestuellement (par exemple, manière vs trajectoire) refléteront la façon dont l'information est structurée dans la parole (Kita & Özyürek 2003). D'autres études ont montré que les gestes représentant la trajectoire s'alignent sur différentes unités linguistiques dans les langues à cadre verbal et à cadre satellite (par exemple, Stam 2006, 2010, 2018). Les gestes accompagnant la parole devraient donc être pris en compte lors de l'étude des schémas de pensée liés au langage (thinking-for-speaking) (par ex. Stam 2018).

Dans ce contexte, la présente étude s'intéresse à la manière dont les mouvements sont exprimés dans la parole et dans les gestes co-verbaux par des locuteur·ices L1 du français, des locuteur·ices L1 du néerlandais et des apprenant·es francophones en immersion néerlandais (CLIL). L'étude comporte également une dimension longitudinale : les apprenant·es ont répété l'expérience deux ans plus tard, ce qui nous permet d'examiner l'évolution de leur schéma de pensées pour parler par rapport à l'évolution de leur niveau linguistique.

Une tâche d'élicitation a été menée auprès de 15 locuteur·ices L1 du français, 14 locuteur·ices L1 néerlandais, et 12 apprenant·es L2 du néerlandais, qui ont narré des scènes de Tweet Zoo (1957). À l'aide de taxonomies établies (par ex. Cadierno & Ruiz 2006 ; Kopecka 2006 ; Özçalışkan & Slobin 1999), nous avons identifié les composantes sémantiques (manière et trajectoire) encodées dans les verbes et les satellites. Les gestes ont été classés comme iconiques, battements, déictiques ou pragmatiques (Kendon 2004 ; McNeill 1992). Les gestes iconiques et déictiques ont été analysés plus en détail pour les composantes du mouvement qu'ils transmettaient. Enfin, nous avons examiné les

combinaisons de composantes sémantiques entre la parole et le geste, et avons analysé la synchronisation geste-parole selon Stam (2006).

Les résultats de la présente étude montrent que même si les locuteur·ices néerlandophones se focalisent sur la manière dans leurs descriptions orales, il·elles ont tendance à produire des gestes de trajectoire uniquement quand il·elles décrivent des mouvements autopropulsés (self-propelled). Ces résultats vont à l'encontre de l'Hypothèse de l'Interface qui prédisait des gestes fusionnés (manière et trajectoire ensemble). Les locuteur·ices francophones ont tendance à se focaliser sur la trajectoire aussi bien dans la parole que dans les gestes. Les différences au niveau gestuel entre les deux langues résident dans l'alignement entre les gestes et la parole: les locuteur·ices francophones ont tendance à produire les gestes de trajectoire en même temps que le verbe tandis que les locuteur·ices néerlandophones les produisent en même temps que le satellite.

En ce qui concerne les apprenant·es, il·elles semblent conscient·es du caractère "manière" du néerlandais mais il est difficile pour elleux d'exprimer les mouvements comme les locuteur·ices L1: en effet, les verbes complexes sont très peu fréquents dans les données et il·elles n'ont pas tendance à accumuler les composantes sémantiques dans la parole. Au niveau gestuel, les apprenant·es ont leur propre comportement: il·elles ont tendance à produire plus de gestes non-référentiels (pragmatiques et battements) et plus de gestes référentiels (ici iconiques et déictiques) par phrase. Les apprenant·es produisent également plus de gestes de manière que les locuteur·ices L1. En somme, nous pouvons parler d'intergeste tout comme les apprenant·es ont une interlangue (Selinker 1972).

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LIST OF ABBREVIATIONS

* + Semantic component	Wrong form or form from another language
e.g., *MannerV	e.g., French manner verb used in L2 Dutch (<i>lancer</i>)
CEFR	Common European Framework of Reference for Languages
CLI	Crosslinguistic influence
CLIL	Content and Language Integrated Learning
CLILa + number	ID given to CLIL French-speaking learners of Dutch in 2021
CLILc + number	ID given to CLIL French-speaking learners of Dutch in 2023
CLIN	Crosslinguistic interaction
CME	Caused motion event
DU	L1 Dutch
DU + number	ID given to L1 Dutch-speaking participants
DU2a	L2 Dutch by CLILa (2021)
DU2c	L2 Dutch by CLILc (2023)
EF (or E-framed)	Equipollently-framed
F	Fragment
FESeC	<i>Fédération de l'Enseignement secondaire catholique</i> [Catholic Secondary Education Federation]
FR	L1 French
FR + number	ID given to L1 French-speaking participants

G	Gesture
ICME	Intentional caused motion event
IL	Interlanguage
L1	First language
L2	Second language
LE	Location event
Ln	Any language acquired or learned after L1
ME + number	Motion event ID
S	Satellite
SF (or S-framed)	Satellite-framed
SV	Subject + Verb
Sp	Speech
SPME	Self-propelled motion event
TFS	Thinking-for-speaking
TL	Target language
UCME	Unintentional caused motion event
V	Verb
VF (or V-framed)	Verb-framed
VO	Verb + Object

INTRODUCTION

Space and spatial relations play a crucial role in our daily lives, influencing how we perceive, interact with, and navigate our environment. From the moment we wake up, we rely on our understanding of spatial relationships to perform simple tasks like reaching for objects, avoiding obstacles, and orienting ourselves within our surroundings. This spatial awareness extends beyond our immediate vicinity, affecting how we plan our routes, organize our living spaces, and even communicate with others through gestures and language. Moreover, our perception of personal space and territorial boundaries shapes social interactions and cultural norms. Our description of space and spatial relations in speech often occurs naturally, without conscious awareness of the underlying cognitive mechanisms. We frequently use spatial language and concepts to convey information about our environment, relationships between objects, and even abstract ideas.

In everyday conversation, we use spatial prepositions like "in," "on," "under," and "between" to describe the relative positions of objects. We use directional terms such as "left," "right," "up," and "down" to guide others or explain locations. These spatial descriptors are so ingrained in our language that we rarely pause to consider the complex mental processes involved in their use and how culture-related they are.

Our gestures frequently accompany spatial descriptions, adding a visual dimension to our verbal explanations. These co-verbal cues complement our speech, often without our conscious intention, further demonstrating the deep-rooted nature of spatial cognition in human communication.

Yet, when we start learning a language, we might realize that space is described differently, that the focus is not on path but on manner or vice versa. We might also feel lost, faced with a pattern we do not know, with both explicit and implicit "rules". As we grow up, we learn to think for speaking (Slobin 1991) and when we learn a foreign language, we have to learn how to think for speaking in our target language to master it. Furthermore, more recent studies have shown that the thinking-for-speaking pattern does not only manifest

itself in speech but also in co-speech gestures. Surprisingly, these aspects receive very little attention in Common European Framework of Reference for Languages, the legal documents governing second language teaching and second language teaching programs of the Wallonia-Brussels Federation while both motion and gestures are central to our life.

French and Dutch have two different thinking-for-speaking patterns as they belong to typologically different categories (i.e., respectively verb-framed and satellite-framed languages (Talmy 1985, 2000)). Given the Belgian context, it seems important to me that these central aspects receive more importance in L2 learning. Nevertheless, there has been few studies on the expression of motion events in these languages as L1 and as L2 except in the subdomains of (caused) location events. The present study aims at filling this research gap and bringing the differences in the multimodal expression of motion events between L1 French and L1 Dutch to light. It also examines how CLIL (Content and Language Integrated Learning) French-speaking learners of Dutch express these events in their target language. In fact, the particularity of this group of learners is that they both acquire (in interaction with L1 speakers) and learn their L2. One of the aims of the present study is thus to determine whether they think for speaking in their L1 or their L2 while speaking in their L2 and if their thinking-for-speaking pattern changes over time.

This thesis is divided into two main parts. The first one presents the theoretical framework in which this work is included, and the second one is dedicated to the present study.

Chapter 1 provides an overview of the expression of motion events in verb-framed and satellite-framed languages. Then, it presents the thinking-for-speaking hypothesis (Slobin 1991).

Chapter 2 demonstrates the importance of co-speech gestures in the communication process and shows how they vary across languages.

Chapter 3 focuses on second language acquisition and crosslinguistic influence. Subsequently, it presents the CLIL context in French-speaking Belgium and it provides a thorough analysis of the mentions of motion and gestures in the Common European Framework of Reference for Languages (Council of Europe 2020), the legal document that governs language teaching in French-speaking Belgium (Fédération Wallonie-Bruxelles

2017) and the program of the Catholic Secondary Education Federation (FESec 2018) to evaluate their importance. Afterwards, it provides an overview of studies conducted on (multimodal) thinking-for-speaking patterns.

The second part is introduced by the presentation of the research questions and hypotheses that will guide the present study.

Chapter 4 presents the methodology. The first part is dedicated to the elaboration of the stimuli and data collection while the second describes the coding scheme used to analyze the data.

Chapter 5 elaborates on the expression of motion events in speech in L1 French, L1 Dutch and L2 Dutch over time.

Chapter 6 explores how motion events are expressed in speech and gestures altogether in L1 French, L1 Dutch and L2 Dutch over time .

Chapter 7 answers the research questions and discusses the main results in relation to existing literature.

Lastly, a conclusion is provided with some avenues for further research.

PART 1:

THEORETICAL FRAMEWORK

CHAPTER 1

LANGUAGE, COGNITION & SPACE

1.1. Introduction

Motion constitutes one of the most essential aspects of human experience: we move every day and engage with entities around us. Consequently, motion is described across all languages on a daily basis. It holds universal significance, rendering it a compelling domain for examining the interplay between language and conceptualization.

This chapter aims to explore motion events, and it elaborates more specifically on the different types and their linguistic realizations (Section 1.2). Subsequently, it introduces the thinking-for-speaking hypothesis (Section 1.3). Lastly, some concluding remarks are provided in Section 1.4.

1.2. The expression of motion events in speech

According to Talmy (1985: 60–61), a motion event is “a situation containing movement or the maintenance of a stationary location”. Dynamic motion events consist of an entity (i.e., the Figure) which moves in relation to a reference entity (i.e., the Ground) along a certain trajectory (i.e., Path). Static motion events consist of the Figure, the Ground and the site occupied by the Figure, which Talmy also called Path but which will be referred to as Location in the present thesis. In addition to these basic semantic components, motion events can feature Manner and Cause, which Talmy qualified as “a distinct external event” or “co-event” (Talmy 1985: 60–61).

Talmy (1985, 1991, 2000a, 2000b) divided languages into two categories depending on how they lexicalize motion events. In satellite-framed languages, manner is encoded in the verb (cf. *vliegen* [fly] in (1) while path is encoded in the satellite (cf. *binnen* [into] in (1)). Indo-European languages excluding Romance languages belong to this category. In contrast, in verb-framed languages, path is encoded in the verb like *entrer* [enter] and

manner in the satellite as in *en volant* [flying] in (2). Romance languages belong to the latter category. Talmy (1985) claimed that in Spanish (and thus verb-framed languages), boundary crossing events (i.e., motion events where the start and endpoint of the motion take place in two different spaces) may not be expressed with a manner verb. This claim is now known as the boundary-crossing constraint. To express a boundary-crossing event in a verb-framed language, the manner verb should thus be substituted by a path verb and accompanied by a manner satellite. For instance, “l’oiseau vole dans la cage” cannot be uttered to express that the bird flies into the cage. This French sentence would be interpreted as “the bird flies in the cage”.

(1) De vogel vliegt de kooi binnen.

[The bird flies into the cage]

(2) L’oiseau entre dans la cage en volant.

[The bird enters the cage flying]

Talmy (1985: 102) first defined satellites as “certain immediate constituents of a verb root other than inflections, auxiliaries, or nominal arguments”. He considered “the satellite role not as a grammatical category in its own right but as a new kind of grammatical relation” and added that satellites can be either a bound affix or a free word. Later, he refined his definition as follows:

It is the grammatical category of any constituent other than a noun-phrase or prepositional-phrase complement that is in a sister relation to the verb root. It relates to the verb root as a dependent to a head. The satellite, which can be either a bound affix or a free word, is thus intended to encompass all of the following grammatical forms, which traditionally have been largely treated independently of each other: English verb particles, German separable and inseparable verb prefixes, Latin or Russian verb prefixes, Chinese verb complements [...] (Talmy 2000b: 102; Talmy 2007: 139).

However, several researchers have criticized the fact that Talmy excluded prepositional phrases and have suggested included them (e.g., Filipović 2007; Harr 2012; Demagny 2013). In the present thesis, all the linguistic means that expressed manner, path and location were considered. The elements outside the main verb (e.g., verb particles,

prepositional phrases and adverbials) were included in the category “satellite” in line with Hendriks & Hickmann (2011).

Furthermore, Stosic (2009) highlighted the lack of a clear definition of “manner”, which is often vaguely described as the mode of realization of a process or the mode of existence of an entity. In the same vein, Slobin criticized Talmy for failing to offer a precise definition of manner (Slobin 2006). While he did not intend to provide a definition either, Slobin qualified manner as follows: “‘manner’ is a cover term for a number of dimensions, including motor pattern (e.g., *hop, jump, skip*), often combined with rate of motion (e.g., *walk, run, sprint*) or force dynamics (e.g., *step, tread, tramp*) or attitude (e.g., *amble, saunter, stroll*), and sometimes encoding instrument (e.g., *sled, ski, skateboard*), and so forth” (Slobin 2006: 62). Stosic (2009) conducted a deeper analysis of the semantic of manner verbs and he suggested that the presence of manner in the verb is due to one or two of the following parameters: “speed (*courir* [run]), *allure* which refers to the specific movement performed by the body to realize the motion (*tituber* [stumble]), strength (*jaillir* [spurt]), absence of locative goal (*errer* [wander]), path form (*zigzaguer* [zigzag]), medium (i.e., body parts, instruments or means of transport that enable entities to move in space) (*chevaucher* [ride a horse]), degree of effort (*gravir* [climb (up)]), environment (*nager* [swim]), extension of the motion in relation to the ground (*apenter* [pace up and down]) and the discrete (or furtive) nature of the motion (*se dérober* [walk away discretely])” (Stosic 2009: 111). While some categories are similar in both descriptions (e.g., rate/speed), the two classifications can complement one another. Later, French manner verbs were classified into ten categories based on criteria derived from the basic level (walk and run) such as varieties of walking and running (Slobin et al. 2014: 718). The authors also classified the adverbial modifications they found in their data into six categories: attitude of actor (e.g., nervous, relaxed), rate (e.g., fast), effort (e.g., light, heavy), posture (e.g., updown, looking down), steps (e.g., long, bouncy) and instrument (e.g., with a cane) (Slobin et al. 2014: 721).

The abovementioned definition and categories serve as a starting point for the current section. The present thesis examines the expression of five types of motion events. These are defined and their linguistic realizations are presented in more detail in the following sections. Section 1.2.1 focuses on self-propelled motion events, Section 1.2.2 elaborates on intentional caused motion events, Section 1.2.3 details unintentional caused motion

events, Section 1.2.4 describes the characteristics of location events and Section 1.2.5 gives the specificities of caused location events. Lastly, Section 1.2.6 discusses the dichotomy proposed by Talmy.

1.2.1. Self-propelled motion events

Self-propelled motion events correspond to what Talmy (1985) called self-agentive motion, that is when the figure moves along a certain trajectory in a specific manner and on purpose as in (1) and (2). The first part of this section is dedicated to their linguistic realization in French (Section 1.2.1.1) while the second one details how they are expressed in Dutch (Section 1.2.1.2).

1.2.1.1. In French

As French is a verb-framed language in Talmy's typology, the expected pattern is the encoding of path in the verb and the optional encoding of manner in a satellite as in (2). Kopecka (2006) estimated that French had approximately 15 path verbs (e.g., *arriver* [arrive], *descendre* [go down], *longer* [go along], *monter* [ascend], *partir* [leave], *passer* [pass by], *traverser* [cross], *venir* [come]). Nonetheless, Kopecka (2006) identified French verbs whose pattern is the typical one found for satellite-framed languages, that is the expression of path in a prefix and manner in the verb root such as in the verb *s'envoler* [fly away]. She sketched a continuum of the different patterns found in French motion verbs that is reproduced here (Kopecka 2006: 98).

Satellite-framed pattern		Verb-framed pattern
		
[PREF_{path}] – [V_{manner}]	[V_{path+manner}]	[V_{path}]
ac-courir	affluer	arriver
dé-rouler	déferler	descendre
é-couler	échapper	entrer...
[PREF_{path}] – [N_{figure}] – er		
é-crèm-er		
é-trip-er		
dé-peupl-er		
[PREF_{path}] – [N_{ground}] – er		
ac-croch-er		
em-pot-er		
dé-raill-er		

Table 1.2.1: Typological continuum of verbs of motion in French (Kopecka 2006: 98)

In terms of boundary crossing events, Aurnague (2008)¹ argued that boundary crossing events in French are more frequent than usually claimed. He identified two groups of manner verbs used to describe self-propelled motion events that express boundary crossing events : verbs that denote speed and verbs that denote motion with effort.

In the first category, we find the verbs *courir* [run], *galoper* [gallop], potentially *trotter* [trot] (see (3)), *foncer* [rush in] and *filer* [dash] as in (4).

- (3) Max a couru/galopé/(?)trotté à la cuisine
 [Max ran/galloped/trotted into the kitchen]

¹ The examples presented to illustrate Aurnague's (2008) analysis were retrieved from his article and were translated.

(4) Max a foncé/filé dans le couloir

[Max rushed into/ran down the hallway]

In these cases, both interpretations are possible and can be distinguished from one another thanks to the syntactical function of the prepositional phrase which can be a modifier (e.g., adjunct) or a verbal complement (Aurnague 2008: 1909).

Verbs such as *rampier* [crawl] (see (5)) or *se trainer* [drag oneself] (see (6)) belong to the second category. In these situations, the figure must overcome external or internal forces which make motion more difficult. These verbs can also lead to a double interpretation: they can describe both boundary crossing and non-boundary crossing events.

(5) Max a rampé sur la terrasse

[Max crawled onto/on the terrace]

(6) Max s'est traîné au salon

[Max dragged himself into the living room]

In addition, Aurnague (2008: 1910) argued that verbs such as *avancer* [go forward], *descendre* [go down], *grimper* [climb], *monter* [go up], *reculer* [go backwards], which he qualified as directional verbs inducing a change of location (*changement d'emplacement* in French), can be interpreted as boundary crossing events and as non-boundary crossing events as Examples (7) and (8) respectively show.

(7) Max a avancé dans le couloir

[Max moved forward in(to) the hallway]

(8) Le chamois est descendu dans le ravin

[The chamois went down in(to) the ravine]

In addition to these categories, Alonso Alonso (2016) found that manner verbs which denote vertical motion such as *saltar* [jump] could also be used to express boundary crossing events in Spanish even though it is a verb-framed language. The same can be found in French as illustrated in (9) and (10) where the manner verbs *sauter* and *plonger* can be used to express an event where the figure crosses a boundary.

(9) Elle saute dans la piscine

[She jumps into the pool]

(10) Elle plonge dans la piscine

[She dives into the pool]

This section has demonstrated that the typical pattern of verb-framed languages as described by Talmy is only one of the possible patterns in French. In fact, French has a variety of verbs that denote path but also manner and both manner and path and some manner verbs can be used to express boundary-crossing events.

1.2.1.2. In Dutch

As Dutch is a satellite-framed language in Talmy's typology, the expected pattern is the encoding of manner in the verb and path in a satellite.

In Dutch², there are verbs which feature particles such as *binnenlopen* [walk into] and *inspringen* [jump into]. They are known as separable verbs (Van Staden, Bowerman & Verhelst 2006). They consist of a verb root (*rijden* [drive] in (11)) and a prefix (*uit* [out] in (11)) (Van Staden, Bowerman & Verhelst 2006: 482). These complex verbs express boundary crossing events.

(11) Hij reed de stad uit

hij drove the town out

[He drove out of town]

Most of the time, the verb root can be accompanied by a prepositional phrase, or the verb can have a separable prefix, but the two constructions express a different meaning as illustrated in (12) and (13) (Van Staden, Bowerman & Verhelst 2006).

(12) Zij liep het bos door

she walked the forest through

[She walked through the forest (to the other end)]

² All the examples presented in this section are extracted from Van Staden, Bowerman & Verhelst (2006) except for (17)

(13) Zij liep door het bos
 she walked through the forest
 [She walked in the forest]

Contrary to English, referring to spaces anaphorically with a demonstrative pronoun is incorrect in Dutch. Instead, deictic adverbs such as *daar* in (14) need to be combined with a particle such as *uit* in (14) and they may occur in one word or in separate words (Van Staden, Bowerman & Verhelst 2006: 481);

(14) Dan komt daar dus een uil uit
 then comes there so an owl out
 [So then an owl comes out of that]

Van Staden, Bowerman & Verhelst (2006: 501) argued that manner verbs themselves imply motion but that they do not indicate whether there is a change of location or whether they describe a “motion-in-place”. While I agree some cases are ambiguous such as (15) where it is not clear whether the figure jumps onto or on the table, others examples they gave clearly indicate a change of location or, as I call them here, boundary crossing events (see (16) where the figures danced into the room). The change of location becomes clear thanks to the position of the particle in the sentence. In addition, there can be motion within the same space without it being in place as in (17) .

(15) Hij springt op tafel
 he jumps on table
 [He jumps on(to) the table]

(16) Ze dansten de kamer in
 they danced the room in
 [They danced into the room]

(17) Zij fietste in het park
 [She cycled in the park]

Manner verbs are also used with prepositions such as *van* [from], *naar* [to], *langs* [past], which introduce the source, the goal or a stage along the trajectory.

In addition to manner verbs, Van Staden, Bowerman & Verhelst (502) identified what they called deictic verbs and verbs with “inherent directionality” and which correspond to path verbs in this thesis. These verbs include: *(aan)komen* [arrive], *vertrekken* [leave], *terugkeren* [return] on the one hand and *stijgen* [ascend] and *dalen* [descend] on the other hand. The authors also included other verbs such as *vallen* [fall] and *brengen* [bring] but these will be discussed in other sections as they do not depict self-motion events. They suggested that these verbs, contrary to manner verbs, always imply a change of location.

Lastly, it can be mentioned that manner verbs can be used with the auxiliaries *hebben* [have] and *zijn* [be] depending on the focus of the motion (i.e., the action itself or the trajectory). As this aspect falls out the scope of the present thesis, it will not be further explored but a deeper analysis of the auxiliary choice can be found in the study conducted by Beliën (2012).

1.2.2. Intentional caused motion events

Intentional caused motion events are events where an external agent causes an entity to move. This section is dedicated to the linguistic realization in French (Section 1.2.2.1) and Dutch (Section 1.2.2.2).

1.2.2.1. In French

In French, speakers typically express intentional caused motion events either by means of complex causative constructions such as *faire* [make] + a verb conveying manner (as in (18)³) or path (as in (19)) or by using a transitive verb (as in (20)) (Hendriks, Hickmann & Demagny 2008).

(18) Le jeu consiste à faire glisser [CAUSE + MANNER] des palets sur une planche.

[The game consists of sliding]

[Lit. ‘of making slide’] disks on a board.]

³ The examples presented here were extracted from Hendriks, Hickmann & Demagny (2008: 18)

(19) Le jeu consiste à faire entrer [CAUSE+PATH] les billes dans les trous.

[The game consists of making the marbles go into the holes.]

[Lit. 'of making enter']

(20) Quelqu'un va vous aider à monter/descendre la valise.

[Someone will help you take the suitcase up/down.]

[Lit. 'to ascend/descend the suitcase']

In their study, they found more variation in the patterns used in L1 French than in L1 English. While L1 English speakers consistently encoded manner and cause in the main verb and path in other speech units, L1 French speakers tended to encode path in the verb and manner and cause in other speech units, but they also used many other structures such as manner and cause in the main verb and path in an adverbial clause.

Much less research has been done on the expression of this type of events than on self-propelled motion events in French. The present thesis seeks to contribute to this research gap.

1.2.2.2. In Dutch

Intentional caused motion events can also be expressed with separable verbs in Dutch such as *intrappen* [kick in] or *weggooien* [throw away] (Van Staden, Bowerman & Verhelst 2006). The authors used example (21) to show that it is possible to encode the source (*van een klein afgrondje* [from a small cliff]), path (*in* [into]), the destination (*het water* [the water]) and the manner (*gooien* [throw]) in one clause in Dutch (Van Staden, Bowerman & Verhelst 2006: 500), which is a characteristic of satellite-framed languages. However, they did not differentiate between the different kinds of motion events in their paper. The event described here is an intentional caused motion and the verb *gooien* [throw] also conveys the causal relationship between the agent (the deer) and the moved entity (the little boy).

(21) Het hert gooit het jongetje van een klein afgrondje het water in

[The deer throws the little boy from a small cliff into the water]

To my knowledge, little attention has been paid to the expression of intentional caused motion events in Dutch. It can be expected that Dutch patterns will be similar to English

ones, that is encoding manner and cause in the verb and path in a satellite. The present thesis thus aims to provide new insights into this.

1.2.3. Unintentional caused motion events

Unintentional caused motion events are events where an entity undergoes motion without any external agent intentionally acting upon it but rather due to external forces such as gravity. To my knowledge, these events have not been investigated as a type of their own in French and Dutch. Still, this section aims to report on their linguistic realization in both languages.

1.2.3.1. In French

It can be expected that the expression of unintentional motion events in French will follow the same pattern as self-propelled and intentional caused motion events, that is that path will be encoded in the verb and manner and/or cause optionally in a satellite.

Concerning boundary crossing events, Aurnague (2008: 1910) identified verbs that describe events where the figure is dragged along by a force (*“entraînement par la force”*), that is when external forces such as gravity cause an entity to move⁴. Such verbs include *déraper* [skid], *glisser* [slide], and *rouler* [roll]. These verbs can express both boundary and non-boundary crossing events as illustrated in (22) (taken from Aurnague (2008:1910).

(22) Max a glissé/dérapé dans le ravin
[Max slid/skidded in(to) the ravine]

In addition, similarly to what we saw in the context of self-propelled motion events, verbs denoting vertical motion can also express boundary crossing events as illustrated in (23). This example also shows that both the source and the goal of motion can be expressed in the same utterance.

⁴ In his taxonomy, these verbs are not qualified as expressing unintentional caused motion events as his criteria do not concern the causality or the intentionality of events, but they fall into this category in the present thesis.

(23) Il est tombé de l'arbre dans l'étang
 [He fell from the tree into the pond]

1.2.3.2. In Dutch

It can be expected that the expression of unintentional motion events in Dutch will follow the same pattern as self-propelled and intentional caused motion events, that is that manner and cause will be encoded in the verb and path in a satellite.

In line with what is doable in the context of self-propelled motion events, path components can be added up to express unintentional caused motion events as illustrated in (24) (retrieved from Van Staden, Bowerman & Verhelst 2006: 480).

(24) Hij viel achterover de trap af tegen de voordeur
 he fell backwards the stairs off against the front door
 [He fell over backwards down the stairs against the front door]

In such cases, the particle encodes the direction (*af* denotes a downward movement). There is thus a semantic link between the verb root and the prefix. This implies that some particles cannot be used as prefixes if the meaning of the two components do not match. For instance, *op*, which expresses an upward direction, cannot come together with the verb *vallen* which implies a downward trajectory (see (25), taken from Van Staden, Bowerman & Verhelst 2006: 505). Still, it can introduce a prepositional phrase as illustrated in (26) as it clarifies the relationship between the figure and the ground (Van Staden, Bowerman & Verhelst 2006).

(25)*hij viel de grond op
 he fell the ground on

(26) Hij viel op de grond
 he fell on the ground
 [He fell on the ground]

1.2.4. Location events

As explained above, Talmy (1985, 2000a, 2000b) considers location events - which he called static motion events - in the same way as dynamic motion events. Lemmens (2005)

and Lemmens & Slobin (2008) investigated to what extent location events and posture verbs are in line with Talmy's typology. They argued that location events should be considered independently from motion events as location verbs do not completely fit into the Talmian typology. A complementary focus on posture verbs and location would provide a more complete understanding of how languages express spatial relations.

While path is encoded in the verb and manner in the satellite in the case of verb-framed languages and manner is encoded in the verb and path in a satellite in satellite-framed languages, this "chiastic opposition" as Lemmens & Slobin (2008:25) called it, is not reflected in the expression of location events. In contrast, there is a parallel in the way location is expressed in the languages classified as verb-framed and satellite-framed by Talmy: location – the core semantic component – is conveyed in a prepositional phrase as illustrated in (27) and (28). Therefore, Lemmens & Slobin (2008:25) qualified the two groups as "preposition-framed".

(27) Leurs vêtements sont sur le lit

[Their clothes are on the bed]

(28) De kleren liggen op het bed

[Their clothes lie on the bed]

The difference between the two categories lies in the type of verbs used. Lemmens & Slobin (2008) distinguished between disposition-framed languages and location-framed languages. The former includes languages such as Dutch which (require the) use (of) posture verbs to locate entities, conveying their disposition or position while the latter encompasses languages such as French where entities are located with the help of a neutral verb such as *be* and where the disposition of the entity in relation to the ground can be expressed by adding a component as *éparpillés* [scattered] in (29).

(29) Leurs vêtements sont éparpillés sur le lit

[Their clothes are scattered on the bed]

1.2.4.1. In French

In French, entities are located with the neutral verb *être* [be] (see (30)), the presentative construction *il y a* [there is] (see (31)), the neutral verb *se trouver* [find oneself], the

perception verb *voir* [see] (see (32)), the possession verb *avoir* [have] (see (33)) or no verb (Lemmens & Slobin 2008; Lemmens & Perrez 2018).

(30) Titi est sur un arbre

Tweety is on a tree

(31) Il y a Titi sur un arbre

There is Tweety on a tree

(32) On voit Titi sur un arbre

We see/one sees Tweety on a tree

(33) Grosminet a un bateau derrière lui

Sylvester has a boat behind him

In addition, L1 French speakers tend to introduce an entity (i.e., the figure) and then add supplementary, often backgrounded, information about that entity in a subordinate clause as illustrated in (34) ((example and translation retrieved from) Lemmens & Perrez 2018). In other words, they add layers to the central core, like an onion.

(34) vous avez un premier client qui est assis sur un fauteuil vert

[you have a first customer who is seated on a green sofa]

1.2.4.2. In Dutch

In Dutch, the posture verbs *staan* [stand], *zitten* [sit] and *liggen* [lie] show three different uses: the postural use (human posture), locational use and metaphorical use (Lemmens 2002; Lemmens 2021). The metaphorical use will not be further discussed here as it falls out of the scope of the thesis.

To locate entities in Dutch, posture verbs are almost compulsory and there is a substantial coding variation (Lemmens 2002; Lemmens 2021). Table 1.2.2 presents the characteristics of *staan*, *liggen* and *zitten*.

<i>staan</i> ('stand')	<i>liggen</i> ('lie')	<i>zitten</i> ('sit')
(i) canonical position	non-canonical position	non-canonical position
(ii) maximally vertical	maximally horizontal	[vertic.] & [horiz.]
(iii) resting on feet (‘stand-side’)	resting on back (‘side-side’)	resting on buttocks (‘sit-side’)
(iv) physical effort to sustain	no physical effort to sustain	some physical effort to sustain
(v) (start) position for walking	position for resting	position for deskwork and active rest
(vi) associations: power and control	associations: rest, weakness, illness, death	associations: active rest, stability, fixed

Table 1.2.2: Experiential prototype clusters for posture verbs (retrieved from Lemmens 2021: 137)

The prototype for the verb *staan* [stand] encompasses several characteristics: it represents the canonical posture of a human being, supported by the feet, and is thus vertical (Lemmens 2021: 137). Some energy is necessary to sustain this posture, which also demands balance. The standing position serves as the initial posture for walking (upright), arguably the most prototypical human movement (Lemmens 2021: 137).

The verb *liggen* [lie] represents the most significant contrast to standing, as it denotes a non-canonical human posture characterized by a maximally horizontal orientation (Lemmens 2021: 137). Typically, this position involves resting on one's back, although it may also occur on any side. This posture requires no effort to maintain and is associated with maximal rest (Lemmens 2021: 137).

The term *zitten* [sit] occupies an intermediate position between vertical and horizontal orientations, requiring some effort to maintain, albeit less than that required for standing (Lemmens 2021: 137). This posture is commonly adopted for various activities such as desk work, encapsulating the concept of "active rest." Sitting is also associated with stability, particularly when compared to standing and lying. Standing necessitates effort to maintain balance and prevent falling, while lying can easily result in rolling over. In contrast, sitting offers greater stability, often with partial containment. The notion of being securely positioned and partially contained is significant in the context of the Dutch concept of *zitten* (Lemmens 2021: 138).

These verbs can also be used with modifiers to describe other postures such as *op je hoofd staan* [stand on your head] or *op je knieën zitten* [literally ‘sit on your knees’] (Lemmens 2021).

In addition to these postural uses, posture verbs are also used to describe inanimate entities. These uses are based on image schemas, that is “abstract representations based on our daily spatial experiences” (Lemmens 2021: 138)⁵.

Staan is used when the entity is on its base. This criterion is more important than verticality. For instance, horizontal objects such as plates require the verb *staan* in their functional position as illustrated in (35) (Lemmens 2021: 139). *Staan* is also used in the meaning of ‘extend away from origin’ such as branches from a tree (Lemmens 2021: 140).

(35) De borden staan op tafel

The plates are on the table

In the case of *liggen*, horizontality plays a prominent role. Lemmens (2021: 143) identified two types of horizontality: objects that are line-shaped and those that are sheet-shaped. Roads and boundaries are examples of the former as they look like lines while tissues and substances (i.e., non-rigid objects that are naturally horizontal because of gravity) belong to the sheet type (Lemmens 2021: 143). In addition, *liggen* is also used with entities which are not resting on their base and thus not in functional state.

Among the multitude of postures *zitten* describes, some are interpreted as looking like small animals’ postures such as rabbits’ or frogs’. Consequently, Dutch speakers tend to use the verb *zitten* to describe their positions even when they are on their paws (Lemmens 2021: 146). In addition, *zitten* is used in contexts of containment and contact. These extensions are metonymically related to the prototype. Lemmens (2021) argues that when *zitten* conveys containment, it does not convey posture anymore. It rather indicates that the entity is contained as in (36). The size of the container also has an influence on

⁵ The main locational uses of posture verbs are summarized here but for a comprehensive overview, see Lemmens (2021)

the verb choice. When the object is in a much larger container, chances are high that another posture verb will be used to locate it more precisely.

(36) Er zit geld in zijn zak

There is money in his pocket

Lastly, L1 Dutch speakers tend to chain location events: they introduce the figure in one clause and it often becomes the ground for the location of a new figure in a subsequent clause, which creates a chain like train wagons as illustrated in (37) ((example and translation retrieved from) Lemmens & Perrez 2018).

(37) tussen de twee [...] nachttafels is er een bed waarop [...] twee hemden en een broek liggen

[between the two [...] bedside tables, there is a bed on which [...] two shirts and one pair of trousers lie]

These subtle nuances are particularly difficult for L2 learners (Lemmens 2002; Lemmens & Perrez 2010; Lemmens & Perrez 2012; Lemmens & Perrez 2018; Lemmens 2021). This will be further discussed in Section 3.5.1.

1.2.5. Caused location events

Caused location events, also called placement events, are a subtype of “caused motion where an agent causes an object to move to an end location while maintaining (manual) control over it until it reaches its final destination” (Gullberg 2009b: 121). Their linguistic realization in French is presented in Section 1.2.5.1 while Section 1.2.5.2 focuses on their realization in Dutch.

1.2.5.1. In French

Caused location events are expressed with the generic verb *mettre* [put] (Chenu & Jisa 2006; Heyvaert 2018). This verb can be used in all configurations as illustrated in (38) and (39) as the located entity does not have any influence on the verb choice in French. It also occurs with various prepositions such as *sur* [on], *dans* [in], *entre* [between], and *à côté de* [next to] (Chenu & Jisa 2006). The verb *poser* [put] can also be used to describe placement events, and it does not require any ground as illustrated in (40). In addition,

Chenu & Jisa (2006) identified more specific verbs that can express caused location events: *accrocher* [hang], *insérer* [insert], and *verser* [to pour in(to)].

(38) Elle a mis une bouteille sur la table

[She put a bottle on the table]

(39) Il a mis des vêtements sur le lit

[He put clothes on the bed]

(40) Il pose la bouteille

[He puts the bottle Ø]

1.2.5.2. In Dutch

As we saw in the previous section, posture verbs are used in Dutch to locate entities. These verbs have causative equivalents that are used in the descriptions of caused motion events (Lemmens 2006; Lemmens & Slobin 2008; Lemmens 2021):

- *Zetten*: derived from *zitten* [sit], literally to make sit or set. It now means: to make stand;
- *Leggen*: derived from *liggen* [lie], literally to make lie or to lay;
- *Stellen*: derived from *staan*, literally make stand but this meaning has been lost;
- Additional verbs: *stoppen* and *steken* which can be used for caused containment.

Zetten is used when the object is on its base (feet for human beings) as in (41). The vertical dimension only plays a role if the object does not have any base. In contrast, the horizontal dimension plays a more important role in the use of *leggen* (Lemmens 2006). *Leggen* is used with objects that are not put on their base and with “non-rigid entities (like clothes or substances) [that] assume a horizontal extension under the force of gravity” (Lemmens 2021: 174) as illustrated in (42).

(41) Hij zet de fles op tafel

He puts the bottle on the table

(42) Zij heeft kleren op het bed gelegd

She put clothes on the bed

Steken is used for caused containment and tend to be used for elongated objects while *stoppen* is not related to a specific type and does not seem to be affected by the shape (Lemmens 2021). Nonetheless, Lemmens (2021) found that it is used more frequently with mass types and symmetrical types than *stoppen*. In addition, *steken* is used to encode partial containment as opposed to *stoppen* which denotes full containment. Furthermore, the type of ground differs with each one: *stoppen* tends to co-occur with “‘pre-existing’ containers” such as a pocket and *steken* with a container that is created by “the (forceful) insertion of the Theme into the Ground that previous to the action did not exist as a container as such” (Lemmens 2021: 177). Lastly, Lemmens (2021) noticed a regional difference in use: *steken* has become more widely used in Belgian Dutch, even for situations in which *stoppen* would be used in Netherlandic Dutch.

1.2.6. Satellite-framed versus verb-framed languages and beyond

While the Talmian typology has been extensively used, certain limitations have been identified, and this categorization has been complemented by further analyses.

Slobin investigated some serial-verb languages (i.e., languages in which several verbs are combined in a mono-clausal construction; e.g., Mandarin) and concluded that they did not fit well in verb-framed languages nor satellite-framed languages. He came up with a third category, namely equipollently-framed languages (Slobin 2004). This third group is characterized by the fact that manner and path are expressed by equivalent grammatical forms (manner verb + path verb or [manner+path]_{verb} or manner preverb + path preverb + verb) (Slobin 2004: 249).

In addition, Slobin (2004, 2006) proposed to classify languages on a cline of manner salience instead of into two categories. He distinguished between high-manner-salient languages and low-manner-salient languages. The first category includes languages which have “an accessible slot for manner in the language” that can be: the main verb in SF languages, the manner verb in serial-verb languages, a manner morpheme in bipartite verbs, the manner preverb in Jaminjung languages or a ideophone while in low-manner-salient languages, and in the second “manner is subordinated to path” (Slobin 2004: 250). The latter encompasses Romance languages and manner is expressed only when it is foregrounded as opposed to high-manner-salient languages where it is easily and frequently expressed.

In contrast, since path is the most salient component of motion, Ibarretxe-Antuñano & Hijazo-Gascón (2012) proposed a classification of languages on a path salience cline. They classified 21 languages based on data from different studies that followed the same elicitation task (*The Frog Story*) and methodology. They ordered the languages according to the proportion of descriptions featuring a minus-ground (only one satellite) and a plus-ground (with an extra path element). While this classification presents an intriguing perspective, it omits the inclusion of Dutch, and therefore, it will not be elaborated upon further in this thesis.

Lemmens (2005) looked at the distinction between verb-framed and satellite-framed languages from the perspective of the importance of the figure versus ground (see Figure 1.2.1). He hypothesized that “satellite-framed languages generally have a larger concern for the Figure, whereas verb-framed languages put more grammatical and lexical effort in the description of the Ground” (Lemmens 2005: 230). The second part of this hypothesis is linked to Slobin's (1996a) findings that speakers of verb-framed languages tend to provide more static scene-settings without explicitly describing the path and manner of motion.

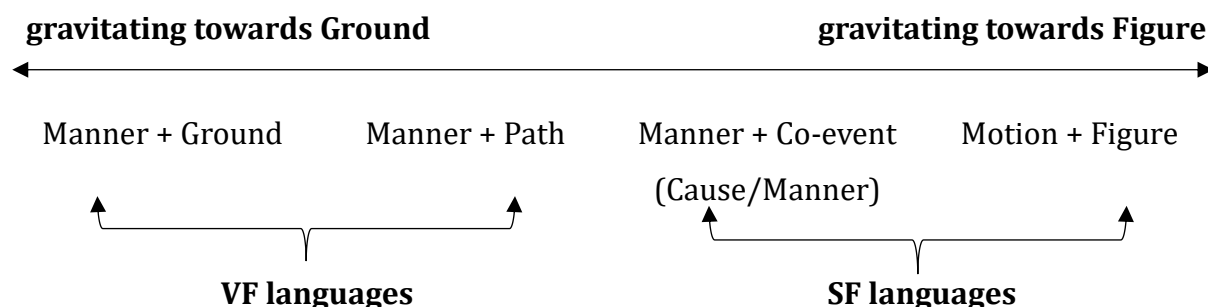


Figure 1.2.1: Figure vs. Ground orientation (retrieved from Lemmens 2005: 230)

Lemmens (2005) argued that incorporating manner into the verb is tied to the Figure and that it describes the entity in more details while in verb-framed languages, the ground can easily be introduced by satellites, which suggests a gravitation towards the ground.

Lastly, intra-typological variations have been observed both within satellite-framed languages (e.g., between English and Serbian (Filipović 2007)) and verb-framed languages. Ibarretxe Antuñano (2004) found differences between Spanish and Basque and Ibarretxe-Antuñano & Hijazo-Gascón (2012) among various dialects of Spanish,

Aragonese, and Basque, while Anastasio (2018; 2023) characterized Italian as more satellite-framed compared to French, due to its hybrid lexicalization patterns. In fact, Anastasio (2023) found a significant difference between French and Italian in the selection of linguistic devices expressing path: only L1 Italian speakers used verb-particle constructions, a typical pattern of SF languages. She thus argued that Italian may be considered as more satellite-framed than French. Furthermore, Hendriks & Hickmann (2011: 332) noticed that while the English pattern is clear, there is more variation in French: path is expressed by other linguistic means than the verb and manner can be expressed in the main verb together with path (e.g., *grimper* [climb]) or on its own (e.g., *patiner* [skate]). Kopecka (2006) contends that French also exhibits typological heterogeneity, warranting a reevaluation. This heterogeneity is further supported by Aurnague (2008, 2024), who identified patterns in French, such as atelic manner verbs combined with prepositional phrases to express telic motion, which are akin to those found in satellite-framed languages. Conversely, Hijazo-Gascón (2021) argues that verb prefixes in French are not true satellites but rather pseudo-satellites, given their infrequency and non-normative usage. He thus concurs with the classification of French as a verb-framed language.

Overall, while the Talmian typology is still used as a reference in current research, several researchers have suggested classifying languages on a continuum rather than dichotomously and several continua have been sketched based on different criteria.

1.3. Thinking-for-speaking

The relation between language and thought was already debated in the 19th century. von Humboldt (1836/1999: 60) already considered the relation between language and worldview as he qualified learning a foreign language as “acquir[ing] a new standpoint in the world-view hitherto possessed”. A century later, studies conducted by Sapir and Whorf led to what we know as the Linguistic Relativity Hypothesis. Two distinct versions can be identified: the strong version, known as linguistic determinism, and the weak version, referred to as linguistic relativity. The strong one entails that the speakers’ language determines how they conceptualize the world while the weak version claims that language influences thoughts (Lucy 1992). These hypotheses were not so popular before the 90s due to the rise of generativism and Chomsky’s Universal Grammar (Bassetti &

Cook 2011). The linguistic relativity hypothesis was rehabilitated in the 90s with new methodologies and theories (Jarvis & Pavlenko 2008; Bassetti & Cook 2011). Several researchers, including Lakoff, Lucy and Slobin suggested that Sapir and Whorf's original claims were oversimplified and misinterpreted (Jarvis & Pavlenko 2008: 16). This misinterpretation also comes from the monolingual bias which was not originally meant by Whorf (Pavlenko 2005; Jarvis & Pavlenko 2008).

Over three decades ago, Slobin introduced the thinking-for-speaking hypothesis, which integrates two research domains: linguistic relativity and typological differences among languages. Slobin (1991) posited that children do not only acquire grammar but also a "framework or schematizing experience" and a specific way of thinking-for-speaking (Slobin 1991: 7). This entails that before we speak, we think in a specific way that is influenced by the characteristics of our first language. In fact, we have been trained to pay attention to specific elements. Slobin (1991) argued that language is associated to a special kind of thinking that happens online while we are speaking. He initially defined thinking-for-speaking as involving "picking those characteristics of objects and events that (a) fit some conceptualization of the event, and (b) are readily encodable in the language" (Slobin 1991: 12). The thinking-for-speaking hypothesis thus finds its root in Whorf and Sapir's work, but yet Slobin (1991) distinguished it from von Humboldt and Whorf's view of linguistic relativity and determinism in that it does not focus on the static entities language and thoughts but rather on the dynamic processes of thinking and speaking. Slobin (2007: 902) argued that to be complete, research on linguistic relativity has to include the cognitive processes that occur while we are using language.

The thinking-for-speaking hypothesis has been tested on spoken and written language in the field of motion events, first by Slobin (1996b; 1997; 2003; Özçakalistan & Slobin 1999) himself and subsequently by a multitude of researchers both in L1 and L2 contexts (e.g., Strömquist & Verhoeven 2004; Benazzo, Flecken & Soroli 2012; Larrañaga et al. 2012; Treffers-Daller 2012; Özçalışkan 2015; Anastasio 2018; Hendriks, Hickmann & Pastorino-Campos 2021; Hijazo-Gascón 2021). In fact, this hypothesis has been tested along with studies on the bilingual mind (e.g., Engemann, Harr & Hickmann 2012; Treffers-Daller 2012; Hijazo-Gascón 2021; Avelledo & Athanasopoulos 2023), and conceptual transfer (e.g., Jarvis & Pavlenko 2008).

It has been demonstrated that these thinking-for-speaking patterns exert influence not only on grammatical structures but also on discourse and rhetorical styles (Slobin 1996b; Slobin 1996a; Slobin 1997; Slobin 2003). For example, satellite-framed languages possess an extensive manner lexicon by incorporating manner into the verb, thereby rendering it a highly salient feature. Consequently, manner tends to be emphasized more than in verb-framed languages. In addition, satellite-framed languages have the capacity to incorporate multiple path elements within a single sentence, thereby enhancing the detail of their motion descriptions. In contrast, VF languages exhibit a more constrained structure, as path is encoded within the main verb and often need additional components to express source and goal. Lastly, speakers of verb-framed languages tend to make more static scene-setting descriptions than speakers of satellite-framed languages (Slobin 1996b; Slobin 1996a; Slobin 1997; Slobin 2003).

Slobin (1991; 1996b; 1996a; 2003) hypothesized that once the L1 pattern is implemented, it is resistant to restructuring, which makes L2 learning challenging. This claim has been examined and will be further analyzed in Section 3.5.

1.4. Conclusion to Chapter 1

In this chapter, the concept of motion events was first defined in Talmy's terms. Subsequently, the differences between verb-framed and satellite-framed languages were presented. In verb-framed languages, path is encoded in the main verb and manner in a satellite while in satellite-framed languages, manner is encoded in the verb and path in a satellite. Talmy's notion of satellite and lack of definition of manner have been criticized. Manner was dissected by Stosic (2009) who proposed parameters to identify manner verbs and Slobin (2006; 2014) who proposed verb categories and adverbial categories.

The second section of this chapter was dedicated to the expression of motion events in speech both in L1 French and L1 Dutch. Regarding self-propelled motion events, Dutch seems to follow the pattern of satellite-framed languages. In contrast, French does not seem to adhere completely to the V-framed pattern. In fact, Kopecka (2006) found verbs that rather correspond to the S-framed pattern and Aurnague (2008) identified manner verbs which can be used to express boundary-crossing events.

Few studies have been conducted on intentional and unintentional caused motion events. To express the former, L1 French speakers tend to use complex causative constructions (*faire* + manner or path verb) while L1 Dutch speakers use manner-cause verbs with path satellites. For the expression of unintentional caused motion events, we can expect that the languages will follow the same pattern as for self-propelled motion events.

Location events should be told apart from motion events as demonstrated by Lemmens (2005) and Lemmens & Slobin (2008). These events are realized through the use of a neutral verb in French while L1 Dutch speakers use posture verbs. Each posture verb has its specific characteristic and use. In addition, Dutch and French also differ in the structures of their locative events: L1 French speakers tend to add layers to the core (the figure) while L1 Dutch speakers tend to chain locative events with the figure becoming the ground for the next figure (Lemmens & Perrez 2018). The difference in verb use is reflected in the expression of caused location events: L1 French speakers tend to use the neutral verb *mettre* [put] while L1 Dutch speakers use the causative equivalents of the posture verbs, which also have their own constraints.

The last part of this section was dedicated to the criticism levelled against the Talmian typology. Several researchers have argued in favor of clines instead of a dichotomy. This way, the intra-typological differences could be better represented and the languages which show characteristics of both categories would be better classified.

The third section explored the thinking-for-speaking hypothesis (Slobin 1991, 1996a, 1996b, 2003). It first briefly contextualized the emergence of the hypothesis. Subsequently, it exhibited the typical features found in verb-framed and satellite-framed languages.

CHAPTER 2

GESTURES

2.1. Introduction: why gesture?

For decades, linguistic research has focused on written and spoken language. However, many other cues are used in face-to-face interactions, and both oral and visual cues contribute to the meaning of utterances. In addition, gestures are a cultural universal (Kita 2009), and everyone gestures including infants and blind people (e.g., Iverson & Goldin-Meadow 2005; Mamus et al. 2025). In the last decades, the growing interest in gestures has revealed their prominent role in communication. According to McNeill, co-speech gestures – the gestures we spontaneously make while we are speaking – form a single integrated system with speech and together, they form unbreakable psycholinguistic units as they share meaning (e.g., Kendon 1972; Kendon 1980; McNeill 1985; McNeill 1992; McNeill 2005; McNeill 2016).

Co-speech gestures play a role both in speech production and speech perception (Kendon 1994; McNeill 1992). Gestures enhance comprehension and semantic processing: they make messages clearer and easier to understand, illustrate concepts, help listeners recognize words more quickly and accurately, and clarify meaning when speech is ambiguous or uttered in challenging listening conditions (Beattie & Shovelton 1999; Cassell, McNeill & McCullough 1999; Hostetter 2011; Dargue, Sweller & Jones 2019; Krason et al. 2022). In addition, gestures help speakers organize their thoughts and spatial information, retrieve words and structure complex information and they can increase fluency (Goldin-Meadow 1999; Alibali, Kita & Young 2000; Alibali 2005; Urbanski & Stam 2023).

The question of whether gestures possess universal characteristics or exhibit language-specific traits—specifically, whether gestures are associated with the thinking-for-speaking pattern of a particular language—has gained significant interest and is at the

heart of the present thesis. Following the outline of the different gesture types in Section 2.2, further examination will be conducted in Sections 2.3. Lastly, Section 2.4 concludes this chapter.

2.2. Gesture types

This section seeks to delineate the various categories of gestures by initially situating co-speech gestures within the broader spectrum of gesture types (Section 2.2.1), subsequently elucidating the distinct types of co-speech gestures (Section 2.2.2), referred to as dimensions by McNeill (1992), and ultimately introducing the two perspectives from which referential gestures—those that contribute to the content of utterances — can be depicted (Section 2.2.3).

2.2.1. Kendon's continuum & McNeill's continua

Kendon (1988) distinguished different types of gestures and later, McNeill (1992) arranged them along a continuum, which he named Kendon's continuum in his honor. This section aims to present these types of gestures and then to give an overview of the continua of gestures McNeill (2005) sketched based on Kendon's continuum.

Gesticulation – also known as co-speech gesture – is “motion that embodies a meaning relatable to the accompanying speech” (McNeill 2005: 5). It is the type of gesture that is the most frequently used. It is predominantly produced with the arms and hands but the head is also used to produce such gestures and even the legs and feet if the hands are not available (McNeill 2005).

Speech-linked gestures are “parts of sentences themselves”: they “occupy a grammatical slot in a sentence [...] and complete the sentence structure” (McNeill 2005: 5).

Emblems are “conventionalized signs such as thumbs-up [...] for ‘OK’” (McNeill 2005: 5).

Pantomime is “a gesture or sequence of gestures conveying a narrative line [...] produced without speech (McNeill 2005: 5).

Signs are “lexical words in a sign language” (McNeill 2005: 5).

McNeill (2005) arranged these types of gestures along four different continua based on different criteria. The first one, illustrated in Figure 2.2.1, shows the (non-)obligations of speech. Speech must accompany co-speech gestures, can accompany emblems and may not accompany pantomimes and sign language.

Gesticulation	Emblems	Pantomime	Sign Language
Obligatory presence of speech	Optional presence of speech	Obligatory absence of speech	The same

Figure 2.2.1: Continuum of the different types of gestures in relation to speech
(McNeill 2005: 7)

The second continuum illustrates the linguistic properties of gestures. Co-speech gestures and pantomimes do not have any linguistic properties while emblems have some and sign language has its own linguistic properties. This analysis reveals a parallel between gestures that accompany speech, which lack independent linguistic properties (co-speech gestures), and those that occur independently of speech and possess distinct linguistic properties (signs) (McNeill 2005).

Gesticulation	Pantomime	Emblems	Sign Language
Linguistic properties absent	The same	Some linguistic properties present	Linguistic properties present

Figure 2.2.2: Continuum of the types of gestures in relation to linguistic properties
(McNeill 2005: 10)

The third continuum (Figure 2.2.3) shows that co-speech gestures and pantomimes are not conventionalized while emblems are partly conventionalized and signs fully conventionalized (McNeill 2005). In fact, co-speech gestures are spontaneous gestures, and the same meaning can be depicted by many different gestures as opposed to signs where one sign has a one-to-one relationship with a concept.

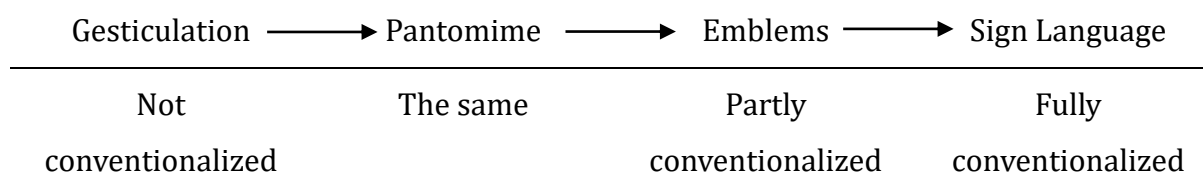


Figure 2.2.3: Continuum of the type of gestures in relation to conventionalization

(McNeill 2005: 10)

Lastly, Figure 2.2.4 shows the semiotic differences between the different types of gestures. Co-speech gestures are global (“the meaning of the parts is determined by the meaning of the whole”) and synthetic (i.e., one co-speech gesture “concentrates into one symbol distinct meanings that might be spread across the entire surface of the accompanying sentence”) (McNeill 2005: 11). Pantomimes are also global, but they can be distinguished from co-speech gestures in that they are analytic, i.e., the semantic functions are separated. Like co-speech gestures, emblems are synthetic, but they are segmented, i.e., the meaning of the whole is determined by the meaning of the parts. Lastly, signs do not share any semiotic properties with co-speech gestures as they are segmented and analytic.

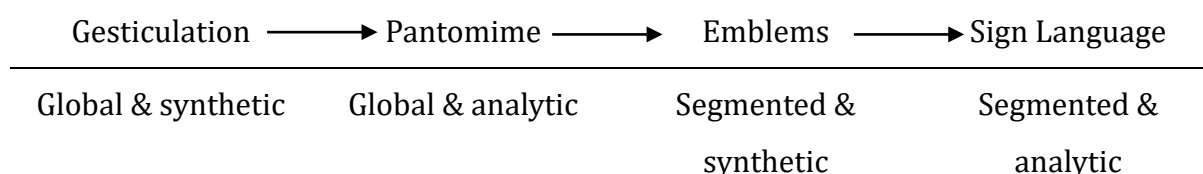


Figure 2.2.4: Continuum of the types of gestures in relation to the character of semiosis

(McNeill: 2005: 10)

The gestures that are at the heart of the present thesis are co-speech gestures. The next section will present the different types of co-speech gestures.

2.2.2. Types of co-speech gesture

This section briefly describes the different types of co-speech gestures as defined by McNeill (1992). These are further elaborated on and illustrated in the section dedicated to gesture coding (Section 4.8.2.1). McNeill (1992; 2006) used the term *dimension* rather than type because one gesture can have several dimensions. In this study, I have focused exclusively on coding the primary dimension of gestures. Consequently, I will use the term "type" to denote this primary dimension.

McNeill (1992; 2006) proposed a classification scheme with four types: iconic, metaphoric, deictic and beats.

Iconic gestures depict images of concrete entities and/or actions. They resemble the event or object they depict. Illustrations of this type of gesture can be seen in Figure 2.2.5, Figure 2.2.6 and Figure 4.8.1 among others.

Metaphoric gestures depict abstract concepts; “the abstract meaning is presented as if it had a form and/or occupied space” (McNeill 2006: 60). Given the nature of the task the participants were asked to complete for the current study, metaphoric gestures were very rare in the data and will therefore not be further discussed.

Deictic gestures are pointing gestures. They are used to locate entities and actions in space in relation to a reference point. This type of gesture is illustrated in Figure 4.8.2.

Beats are “mere flicks of the hand(s) up and down or back and forth, zeroing in rhythmically of the prosodic peaks of speech” (McNeill 2006: 60). This gesture type is exemplified in Figure 4.8.4.

Iconic, metaphoric and deictic gestures are referential gestures: they contribute to the content of the utterance. In contrast, beats are non-referential. The next section focuses on referential gestures and more specifically on the perspectives from which they can be produced.

2.2.3. Viewpoint

Referential co-speech gestures can be made from two perspectives: the observer viewpoint and the character viewpoint. The former refers to cases where the narrator depicts the event from an external point of view as illustrated in Figure 2.2.5 where the participant used his fingers to represent the characters’ paws and depicted the character walking along a certain path.



Figure 2.2.5: Observer viewpoint gesture depicting manner and path (DU4, ME26)

The latter refers to cases where the narrator embodies the character to depict the event as in Figure 2.2.6 where the participant enacts the action of flying. McNeill (1992) claimed that character viewpoint gestures are frequently associated with transitive utterances and those utterances that are central to the narrative.

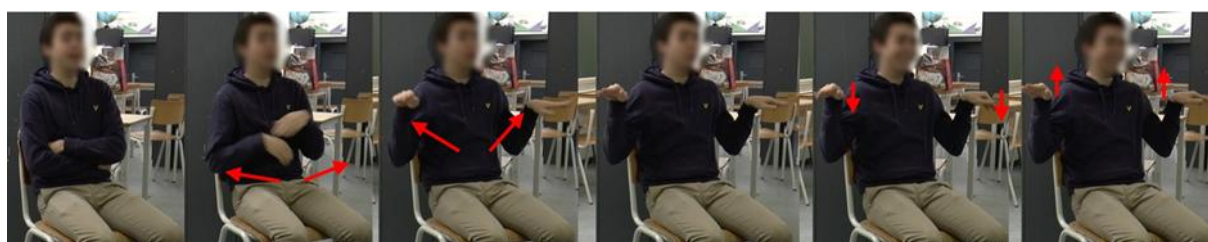


Figure 2.2.6: Character viewpoint gesture depicting manner (CLIL9a, ME66)

Parrill (2010) argued that some types of events cannot plausibly be accompanied by both types of gestures and that the type of event should therefore be considered. This study revealed that the transitivity of the event, its visuo-spatial and motoric properties and the discourse structure influence the gestural viewpoint. Transitive utterances tend to feature a character viewpoint gesture while intransitive utterances prefer observer viewpoint gestures. Events that prominently depicted a character's hand use were often depicted from a character viewpoint while events that primarily involve a character's movement along a path were often depicted from the observer viewpoint. For some events, both kinds of gestures were found in the data. Parrill (2010: 661) suggested that it is rather due to discourse factors such as the status of the information or the narrator's focus. Parrill (2011) built up upon these findings and investigated the relation between the gestural viewpoints and the semantic components encoded in gestures. L1 English speakers narrated a cartoon featuring motion events to a friend. The findings showed that manner-

only gestures were made from the character viewpoint significantly more frequently than from the observer viewpoint while path-only gestures and manner-path gestures are significantly more likely to be produced from the observer viewpoint. Parill (2011) contends that the choice of viewpoint may serve to highlight or downplay certain semantic features: character viewpoint would highlight manner while observer viewpoint would downplay it. The last argument is in line with McNeill and Duncan's (2000) claim about manner gestures in English as explained in Section 2.3.2.

2.3. Speech and co-speech gestures

As speech and gestures form an integrated system and are synchronous (e.g., Kendon 1972; Kendon 1980; McNeill 1985; McNeill 1992; McNeill 2005; McNeill 2016), the meanings they convey have been studied in parallel to speech. The domain of motion has been particularly of interest, and two main hypotheses are still tested nowadays. Section 2.3.1 is dedicated to one of them: the Interface Hypothesis, formulated by Kita & Özyürek (2003). The second one is Slobin's thinking-for-speaking hypothesis. It was first tested on speech data but as the question of whether gestures have universal or language-specific characteristics emerged, researchers started to test this hypothesis on a multimodal level, taking co-speech gestures into account. Section 2.3.2 gives an overview of the recurrent characteristics of gestures in verb-framed languages and satellite-framed languages.

2.3.1. The Interface Hypothesis

Kita & Özyürek (2003: 18) formulated the Interface Hypothesis which posits that gestures are influenced by "both the linguistic formulation possibilities and the spatio-motoric properties of the referent that are not verbalized in the accompanying speech". It thus suggests that "gestures originate from an interface representation between speaking and spatial thinking" (Kita & Özyürek 2003: 17). In other words, gestures are based on a spatio-motoric imagery that is shaped in real-time by two factors: the process of organizing information to fit into a speech production unit (e.g., a clause), and the spatio-motoric properties of the event being described. This implies an online interaction between speech formulation and gesture production. Concretely, the hypothesis predicts that when manner and path are packed in a single clause in speech, speakers will tend to

make conflated gestures. In contrast, when manner and path are expressed in separate clauses, speakers will tend to make separate gestures.

Kita & Özyürek (2003) conducted a study in which they tested this hypothesis along with (1) the Free Imagery Hypothesis (e.g., De Ruiter 2000) which suggests that the way the information can be verbally expressed does not influence the semantic components in gestures and with (2) the Lexical Semantic Hypothesis (Schegloff 1984; Butterworth & Hadar 1989) which predicts that “gestures are generated from the semantics of lexical items in the accompanying speech” (Kita & Özyürek 2003: 17). They compared how L1 English speakers, L1 Japanese speakers and L1 Turkish speakers expressed two events (from the cartoon *Canary Row* (1950)) in gestures as there was a lack of resources to express the first event (i.e., the swing event) in speech in Turkish and in Japanese as opposed to English and as the semantic components would be packaged more tightly in English than in Turkish and Japanese for the second event (i.e., the rolling event). They found variation in iconic gestures and thus that language influences the semantic components encoded in gestures. More specifically, they claimed that the gestural description of an event is similar to the verbal description and that, at the same time, gestures depict spatial details that are absent in speech. To them, the fact that Turkish speakers produced two different gestures to depict manner and path is due to the fact that these two elements are difficult to express as one single processing unit in speech whereas English speakers do produce conflated gestures because the information can be easily encoded in one single clause.

Several studies have found results that are in line with the Interface Hypothesis (e.g., Özyürek et al. 2005; Kita et al. 2007; Peiró Márquez & Ibarretxe-Antuñano 2021; ter Bekke, Özyürek & Ünal 2022) and Özyürek et al. (2008) found that even though children learn how to speak in language specific ways at the age of three, their gestures started to be different at the age of nine.

2.3.2. Multimodal patterns of thinking-for-speaking

Crosslinguistic differences in thinking-for-speaking are manifested not only in speech but also in gestures. This section aims to give an overview of the differences found between verb-framed and satellite-framed languages on gestural and multimodal levels.

Self-propelled motion

McNeill & Duncan (2000) found two gestural patterns in English: speakers either produced a manner gesture reinforcing the manner component encoded in speech or they produced a path gesture which downplayed the importance of manner. In the examples they gave, the speakers produced the manner gesture at the same time as the verb and the path gesture at the same time as the satellite. In contrast, they found the reverse situation in Spanish: Spanish speakers encoded manner in gesture without encoding it in speech. McNeill & Duncan (2000) coined the term *manner fog gestures* to refer to this phenomenon. Manner gestures were combined with other speech units such as path verbs and/or ground noun phrases.

Stam (2006; 2008; 2010) also compared how Spanish speakers and English speakers express motion events in speech and gestures. She analyzed the narrations of two fragments from the cartoon *Canary Row* (1950): Sylvester climbing up inside the drainpipe and Sylvester and the bowling ball rolling down, out of the drainpipe, down the street and into a bowling alley. Stam (2006; 2008; 2010) found that L1 Spanish speakers uttered more clauses than L1 English speakers and used path verbs while L1 English speakers encoded path in satellites. These results are in line with the thinking-for-speaking hypothesis. In addition, L1 Spanish speakers tended to make path gestures while they were uttering the verb while L1 English speakers did so while they were uttering the verb, the satellite or the ground. Negueruela et al. (2004) found that L1 English speakers' path gestures co-occurred with the satellite and to a lesser extent with the ground noun phrase while L1 Spanish speakers' path gestures mostly co-occurred with the verb and sometimes with the ground noun phrase. They also observed that L1 English speakers' manner gestures co-occurred with utterances featuring manner in most cases while L1 Spanish speakers' manner gestures mostly came with utterances in which manner was not expressed.

In line with Stam (2006, 2008, 2010) and Negueruela (2004), Choi & Lantolf (2008) found that L1 English speakers make path gesture while uttering the satellite or ground noun phrase. Besides, they observed that L1 Korean speakers (VF language) synchronized their gestures with the verbs, ground noun phrases and suffixes. L1 Korean speakers often express manner and path separately both in speech and gestures as opposed to L1 English

speakers who tended to express them together in speech and gestures with manner verbs co-occurring with manner-path gestures. The results on the encoding of semantic components support the interface hypothesis.

Kellerman & van Hoof (2003) also looked at the synchronization between path gestures and speech units in L1 English, L1 Spanish and added L1 Dutch to the corpus. Their results for Spanish are in line with Stam (2006, 2008, 2010), Negueruela (2004) and Choi & Lantlof (2008). However, they found that English speakers tend to produce path gestures while they utter the verb and satellite, which contrasts with the abovementioned authors' findings. Lastly, in Dutch, L1 speakers' path gestures tend to co-occur with the satellite, following the satellite-framed pattern.

Gullberg, Hendriks & Hickmann (2008) investigated how L1 French adults and children express motion in speech and gesture. They used short animated cartoons depicting different kind of motion events (e.g., running, swimming...) to elicit data. It appeared that both children and adults predominantly focused on path. Manner was less frequently encoded although expressions combining path and manner increased with age, especially for upward movement and crossing events. Concerning gestures, L1 French speakers tend to make path gestures when path is as relevant as manner and especially for downward movement (Gullberg, Hendriks & Hickmann 2008: 225). Nevertheless, when describing crossing or manner-salient events, they also make manner gestures. Children show the same behavior from age four except in the case of conflated gestures: adults prefer to make separate gestures while children opt for conflated ones, and it decreases with age. The authors also observed that speech and gestures were largely co-expressive: gestures aligned with the semantic components conveying the same information. In the cases where gestures are non-redundant, children tend to make conflated gestures, sometimes together with "*comme ça*" [like this] while adults are still inclined to make path gestures. Lastly, these findings suggest that when manner is foregrounded, it can be brought to the forefront. These results were later compared with English data from both L1 children and adults speakers (Hickmann, Hendriks & Gullberg 2011). Similarly to L1 French-speaking children, L1 English speaking children showed a similar linguistic and gestural behavior as adults from the age of four on and they also exhibited developmental progressions as they grew older. Speech and gestures were also found to be co-expressive and L1 English

adults conveyed more semantic components in speech than in gesture. In fact, L1 English speakers predominantly made path-only gestures.

Brown & Chen (2013) analyzed the descriptions of motion in L1 Mandarin-Chinese (EF language), L1 English and L1 Japanese (VF language) as there is no consensus on the expression of motion in equipollently-framed languages. They found that manner was encoded in speech significantly more often in Mandarin and English than in Japanese and that L1 Mandarin speakers and L1 English speakers rarely made manner gestures when it was not mentioned in speech. Mandarin speakers did not tend to encode manner in gestures when they mentioned it in speech either. They did so significantly less often than L1 English and L1 Japanese speakers. Based on these results, the authors proposed a framework for manner salience which features three levels: low salience (manner is absent in speech and gesture), mid salience (manner is encoded in speech or gesture: in SF languages and E-languages only in speech and in VF languages only in gestures) and high salience (manner in both speech and gestures).

Yoshioka & Kellerman (2006) compared the introduction of ground in speech and gestures in L1 Dutch and L1 Japanese. They observed that L1 Dutch speakers tend to introduce ground as they express motion and that they introduce ground in existential constructions less frequently than Japanese speakers. This finding is in line with Slobin's claim that speakers of SF languages tend to describe processes more than static scene settings. Concerning gestures, L1 Dutch speakers gestured in one-third of the cases where they introduced ground while L1 Japanese speakers did it twice as much. When they made gestures, L1 Dutch speakers depicted the ground in half of the cases and action or direction in half of the cases as opposed to L1 Japanese speakers who depicted the ground in most cases. This finding also confirms Slobin's claim about the descriptions of processes versus static scene settings, and it also provides further evidence for the idea of a single system formed by speech and gestures (McNeill 1992; McNeill 2005; McNeill 2016; Kendon 1980; Kendon 2004; Yoshioka & Kellerman 2006). Lastly, it suggests that the introduction of ground reference in gestures could also reflect the typological differences between languages.

Lastly, Tütüncü et al. (2023) investigated when gestures follow or do not follow the language-specific pattern found in speech. They compared the co-speech gestures and

silent gestures (i.e., gestures made without speech) of English speakers, Turkish speakers and Mandarin-Chinese speakers and they found that the three groups followed their own language-specific patterns in speech and co-speech gestures but not in silent gestures. This study provides evidence for the thinking-for-speaking hypothesis in that thoughts are influenced by language only during the online process of speech production.

Caused location

Concerning placement events, Gullberg & Narasimhan (2010) found that Dutch-speaking children only expressed path in gesture at the age of three and incorporated the located object at the age of five, as adults do. They observed that these tendencies are linked to the verb use: the children who generalized the use of *leggen* [lay] to all the placement events only made path gestures while those who used both *zetten* [set] and *leggen* [lay] thereby differentiating between horizontal and vertical placements, incorporated the located object in their gestures. Gullberg (2010) compared how L1 French speakers and L1 Dutch speakers encoded placement events in both speech and gestures. Her study revealed that L1 Dutch speakers incorporate the figure object information in their gestures significantly more than L1 French speakers who tend to make path-only gestures. L1 Dutch speakers also make path-only gestures so but to a lesser extent. Most gestures co-occurred with the verbal phrase in both languages, followed by the prepositional phrase. Gullberg (2010: 178) interpreted these results as a treatment of the action as “the most newsworthy element”. In addition, she noticed that the participants did not directly imitate the agent they saw in the stimulus. Instead, they gestured something different. These differences mirror how L1 French speakers and L1 Dutch speakers each select spatial semantic components to express these events both in speech and gestures. The study thus supports Slobin’s thinking-for-speaking hypothesis.

Location

Regarding location events, a study on French *sur* and English *on* revealed that speakers encoded directional information in their gestures (Tutton 2011). They did not depict the contact between the figure and the ground nor the locative support. Gestures thus conveyed pieces of information that were not encoded in speech (Tutton 2011). Tutton (2011) explained these results by the fact that locative expressions featuring ‘*sur*’ and ‘*on*’ are generally unambiguous and are not influenced by the speakers’ perspectives while

speech conveying directional information is. Gestures thus serve to disambiguate this semantic component.

2.4. Conclusion to Chapter 2

This chapter has demonstrated how important co-speech gestures are by citing some of their functions. Subsequently, it has contextualized co-speech gestures in relation to other types of gestures by presenting Kendon's and McNeill's continua. It has also presented the different types of co-speech gestures, but these will be explored in more details in Section 4.8.2.1. It has then zoomed in on the two perspectives from which referential gestures can be produced. Parrill (2010) suggested that the gestural viewpoint depends on the transitivity, the visuo-spatial motoric properties of the event and the discourse structure. She argued that character viewpoint gestures tend to occur with transitive utterances and to depict manner while observer viewpoint gestures tend to occur with intransitive utterances and to depict path gestures. Consequently, she contends that the choice of gestural viewpoint can highlight or downplay some semantic components.

The next section was dedicated to the relationship between the semantic components encoded in speech and gestures. The first part presented the Interface Hypothesis (Kita & Özyürek 2003) which predicts that if the semantic components manner and path are packed tightly in speech (i.e., in one clause), speakers will tend to pack them tightly in gestures as well and thus make conflated gestures. In contrast, in the languages where they cannot be packed tightly, speakers will tend to make two separate gestures. This hypothesis has been supported by several studies conducted on English, Turkish, Japanese and Spanish, among others.

The second part explored the multimodal thinking-for-speaking patterns of various languages. Overall, studies have found that L1 Spanish speakers tend to make path gesture while they utter the verb (and sometimes the ground noun phrase) while L1 English speakers tend to produce path gestures while uttering the satellite, the verb, the ground noun phrase or the verb and satellite (Stam 2006; Stam 2008; Stam 2010; Negueruela et al. 2004; Choi & Lantolf 2008; Kellerman & van Hoof 2003). Kellerman & van Hoof (2003) also observed that L1 Dutch speakers make path gestures while uttering the satellite. In addition, some studies also examined the semantic components encoded in gestures. McNeill & Duncan (2000) suggested that manner gestures in English would highlight the

importance of manner while path gestures would downplay it. They also found manner gestures in Spanish, that is manner gestures accompanying an utterance that does not convey manner. In addition, Yoshioka & Kellerman (2006) found a difference between L1 Dutch and L1 Japanese in the way ground is introduced. While the former tend to introduce ground when they express motion, the latter tend to introduce it first with an existential construction. Concerning French, L1 speakers tend to focus on path in both speech and gestures. Nevertheless, when manner is salient, speakers also make manner gestures. Gullberg, Henriks & Hickmann (2008) found that gestures co-occurred with the speech unit that conveyed the same semantic components. The same authors observed that L1 English speakers tend to express more semantic components in speech than in gesture: manner tend to be expressed only in speech and they tend to make path gestures. Lastly, Brown & Chen (2013) proposed a categorization of manner salience featuring three categories: low salience, mid salience and high salience.

When expressing caused location events, L1 Dutch speakers tend to incorporate the objects in gestures while L1 French speakers tend to make path gestures. Lastly, when location gestures accompany an unambiguous locative description in speech, L1 French speakers and L1 English speakers encode directional aspect in gesture (Tutton 2011).

While the findings on gesture and speech synchronization go in the same direction, the ones on semantic components show some disagreement. The studies that found evidence for the Interface Hypothesis found that L1 English speakers tend to make conflated gestures while Gullberg, Hendriks & Hickmann (2011), for instance, found that L1 English speakers tend to make path gestures.

CHAPTER 3

SECOND LANGUAGE ACQUISITION

3.1. Introduction

For decades, the objectives of second language research have centered on elucidating the fundamental mechanisms underlying second language acquisition, as well as the characteristics and developmental trajectory of the L2 learner language. A primary inquiry within this field has been to ascertain the influence of L1 on L2 acquisition, with subsequent consideration given to the impact of other foreign languages. Overall, the purpose has been to determine how learner language functions as a system. Section 3.2 offers an in-depth analysis of crosslinguistic influence⁶ and interlanguage, which are pivotal areas in the study of second language acquisition.

Furthermore, a distinction is frequently drawn between second language acquisition, defined as “subconscious process of ‘picking up’ a language through exposure” (Ellis 1994: 14), and second language learning, which refers to a conscious learning process (Ellis 1994: 14). Given that the focus of the present study is on Content and Language Integrated Learning (CLIL) learners, the target language is both acquired during classes conducted in L2 and learned during L2 instructional classes. Section 3.3 outlines the specific characteristics of the CLIL context.

In French-speaking Belgium, language teaching is regulated by a legal document inspired by the European Council’s guidelines, which each teaching network uses to develop its programs. As CLIL students’ L2 classes follow these regulations, a key term analysis was conducted on the document to examine the presence and treatment of co-verbal elements

⁶ In this dissertation, the terms ‘transfer’ and ‘crosslinguistic influence’ are used interchangeably.

and motion events. Understanding how these elements are addressed in official texts provides important context for interpreting communicative competence in L2 learners. Furthermore, given the longitudinal nature of this study, participants completed a language proficiency test before taking part in the experiments. Section 3.4 thus provides a concise overview of both the proficiency levels defined by the Common European Framework of Reference for Languages and the representation of co-verbal elements in official L2 teaching documents.

In the last thirty years, there has been a growing body of research first on thinking-for-speaking in L2, and more recently on the interaction of the L2 thinking-for-speaking pattern and L2 gestures. The latter part of this section, Section 3.5, is dedicated to motion events description and gesture use in L2. Section 3.5.1 provides an account of the studies on thinking-for-speaking in L2 and Section 3.5.2 explores the interplay between speech and gestures in the context of motion events descriptions. Finally, Section 3.5.3 provides a summary of the key ideas.

Lastly, Section 3.6 concludes the present chapter.

3.2. Crosslinguistic influence, transfer and interlanguage

This section is divided into five subsections. The initial subsection addresses the foundational contributions to transfer research. This is achieved by an overview of recent advancements in the field. Subsequently, the characteristics of crosslinguistic influence are delineated, followed by an examination of potential relationships between words and conceptualization. The section concludes with some final remarks.

3.2.1. The emergence of transfer research

According to Odlin (1989: chap. 2), the initial investigations into language transfer were undertaken during the mid to late 19th century. As noted by Jarvis & Pavlenko (2008: 5–6), a significant contribution to the early phase of transfer research—specifically, the acknowledgment and examination of transfer as a factor influencing other processes—

was Weinreich's monograph (1953). Weinreich (1979)⁷ focused on languages in contact, defined as languages alternately used by an individual. He described interference as the "instances of deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language" (Weinreich 1979: 1) and posited that bilingual language users possess "two coexistent systems rather than a merged single system" (1979: 9). Several years later, Lado (1957) claimed that language users are inclined to transfer the forms and meanings of their first language (L1) and cultural context to their second language (L2) in both language production and comprehension. He argued that features shared between a learner's L1 and L2 would be more easily acquired, whereas those that differ would present greater challenges. To enhance language acquisition, it is suggested that learners should overcome their L1 habits rather than transfer them. This theory, known as the Contrastive Analysis Hypothesis, faced scrutiny because learners appeared to follow similar developmental trajectories despite having diverse L1 backgrounds.

Recognizing the inadequacies of the Contrastive Analysis Hypothesis in accounting for uniform patterns in learner development, researchers began to seek alternative explanations—leading to the emergence of the interlanguage concept, which redefined learner output as a systematic and evolving linguistic system rather than mere transfer-induced errors. Selinker (1972: 214) posited the existence of a distinct linguistic system, termed interlanguage, which emerges from the observable output of learners' attempts to produce a target language (TL) norm. Contrary to traditional perspectives that often regarded learner language as a flawed version of the target language, Selinker (1972) argued that interlanguage constitutes an independent linguistic system. This system is based on the observable output of learners striving to achieve the target language norm. He thereby differentiated between the first language, the target language, and the interlanguage, challenging the binary perspectives of second language acquisition. Selinker (1972) adopted a learning-focused perspective, in contrast to Lado (1957), who was primarily concerned with teaching, and sought to emphasize the cognitive processes of learners. Selinker (1972: 215) identified five core processes in second language learning: language transfer, transfer-of-training (i.e., the influence of teachers and

⁷ The 9th edition of Weinreich's (1953) monograph, *Languages in contact*, is cited as it was the version consulted.

textbooks), strategies of second language learning (e.g., simplification), strategies of second language communication (e.g., specific approaches of an L2 user to communicate with an L1 user), and overgeneralization of the target language linguistic material. He introduced the concept of a "latent psychological structure" that becomes activated when an adult attempts to speak a foreign language, as well as the notion of fossilization. Fossilization is defined as a mechanism within the latent psychological structure that "underlies surface linguistic material which speakers will tend to keep in their IL productive performance, no matter what the age of the learner or the amount of instruction he receives in the TL" (Selinker 1972: 229). Ellis (1994) suggested that there are three phases of interlanguage development: innovation (acquisition), elaboration (complexification when the second language speaker learns about the contextual use of the new structure) and revision (adjustments). This reconceptualization shifted the focus away from direct L1 transfer and toward internal cognitive processes, consequently minimizing the perceived influence of the L1 in SLA.

Cook (2016) further argues that the role of L1 in second language acquisition was minimized in the 1970s, possibly because of Weinreich's (1953) belief that languages are co-existent systems rather than a merged one. However, the field became more prominent in the 1980s. Because the term *transfer* was associated with behaviorist theories, Sharwood Smith & Kellerman (1986: 1) came up with the term *crosslinguistic influence* which they defined as "the interplay between earlier and later acquired languages". It includes the effects of L2 on L1 and the phenomena of avoidance (i.e., when the learners are aware that the L2 structure is different than the L1's but they are not familiar with the L2's and therefore avoid it), borrowing and L2-related aspects of language loss. In addition, Odlin (1989: 27) provided a working definition of *transfer*: "the influence resulting from the similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired". He noted that crosslinguistic similarities and differences can generate both positive and negative transfers. In the former case, similarities can facilitate second language acquisition in the case of cognates (from the learners' point of view, any lexical similarities can be considered cognates). In the latter, similarities and differences between the L1 and L2 can lead to underproduction, overproduction, errors production and misinterpretation (Odlin

1989: 36). Odlin (1989) also acknowledged that if the speaker knows two languages, both can influence the acquisition of a third one (and so on).

Jarvis & Pavlenko (2008) summarized eight important findings concerning crosslinguistic influence during the 1960s-1980s. First, the outcome of CLI is not always errors: it sometimes leads to conventional language use and helps with language acquisition. Moreover, the similarities and differences between the source language and recipient language lead to underproduction or overproduction of TL structures. It can favor some forms above others, but both are still correct (e.g. from Dagut & Laufer 1985: enter vs. come in). Second, CLI can influence the stages and sequences of L2 learning. Third, it contradicts the strong version of the Contrastive Analysis Hypothesis (Lado, 1957): the easily perceivable differences between the source language and recipient language can favor learning. For instance, the English progressive is easy for Arabic speakers even though there is no counterpart in Arabic (Kleinmann 1977, as cited in Jarvis & Pavlenko 2008). In addition, similarities between the source language and the recipient language lead learners to make mental associations between the two languages (Odlin 1989: 113–114; Weinreich 1979: 7). Fourth, CLI is not inversely proportional to proficiency levels as it also occurs at higher levels. Fifth, there are different transfer directionalities: forward transfer (L1 to L2), lateral transfer (L2 to L3) and reverse transfer (L2 to L1). Sixth, cross-linguistic influence (CLI) interacts with additional factors, such as individuals' perception of typological distance and the extent to which they regard linguistic structures as language-specific. These interactions collectively influence the probability of linguistic transfer. Seventh, transfer can occur at all levels: phonology, morphology, syntax, semantics, pragmatics. Finally, there are individual differences in CLI.

These pioneering studies have established the foundation for research in second language acquisition. On one hand, they emphasize the influence of the first language on the acquisition of a foreign language, while on the other hand, they highlight the significance of learner language as a distinct variety.

3.2.2. More recent advances in transfer research

Building upon the premise that learners construct their interlanguage, Cook (1991) introduced the concept of multi-competence, which refers to the integration of the L1 and L2 interlanguage. By doing so, he reintroduced the L1 component and posited that the

entire cognitive framework of the L2 user is engaged in L2 acquisition. He initially defined this as “the compound state of mind with two grammars” (Cook 1991: 112). The notion of L1 stability has been contested, with research indicating that L1 can undergo attrition and be influenced by L2 (Cook 2003; Pavlenko 2000). Cook (2003: 2) further proposed that an individual's languages coexist within the same cognitive framework and, rather than being isolated, they form a “language super-system at some level”.

In addition to examining the influence of L2 on L1, the question of the influence among foreign languages themselves has also been raised. De Angelis & Selinker (2001) observed that prior definitions appeared to suggest the inclusion of a foreign language (Ln) as a potential source of language transfer, yet they found no supporting evidence. They thus combined the phenomena of transfer and interlanguage and introduced the concept of interlanguage transfer, which they defined as “the influence of a non-native language on another non-native language” (De Angelis & Selinker 2001: 43). They posited that during interlanguage production, the linguistic systems present in the speaker's mind may interact and compete simultaneously.

Convinced that the concept of crosslinguistic influence was not broad enough, Jessner (2003: 46) brought in the term *cross-linguistic interaction* (CLIN). CLIN results from the interaction of several languages systems and includes transfer, interference, codeswitching, borrowing phenomena, thereby including all cognitive and linguistic transfer phenomena and it encompasses “nonpredictable and dynamic effects [...] that determine the development of the systems themselves and the multilingual system” (Jessner 2003: 49; Jessner 2023: 76; Jessner, Megens & Graus 2016).

Nevertheless, the term crosslinguistic influence (CLI) persisted in usage and was subsequently defined as “the influence of a person's knowledge of one language on that person's knowledge or use of another language” (Jarvis & Pavlenko 2008: 1). In this context, CLI is perceived not only as a communicative strategy but also as a learning mechanism: learners use their knowledge of one language to formulate hypotheses about their second language at formal, structural, functional, and semantic levels. Additionally, L2 learners may integrate the forms of one language with the meanings of another. Moreover, the occurrence of CLI from L2 to L1 indicates that it is not invariably a strategy used due to a lack of knowledge. De Groot (2011) further developed her own

conceptualization of crosslinguistic influence, also referred to as crosslinguistic transfer. She defined it as "the influence of the non-selected language on the selected language during language use by bilinguals (and multilinguals), or the effect of a previously acquired language (e.g., the L1) on the acquisition of a new language (e.g., L2). Crosslinguistic influence can have positive as well as negative effects on language use and acquisition, speeding up or slowing down language use and facilitating the acquisition of a particular structure in the new language or misleading the learner" (de Groot 2011: 449–450).

Cook's conceptualization and subsequent definition of multicompetence evolved over time, ultimately being characterized as "the overall system of a mind or a community that uses more than one language" (Cook 2016b: 2). Cook (2003: 9; 2016b: 9) proposed a continuum illustrating the potential relationships between languages within multicompetence (see Figure 3.2.1). At one extreme, languages are entirely isolated from one another, as suggested by Weinreich (1979). Conversely, at the other extreme, languages are fully integrated, with an intermediate state where they are interconnected. Cook (2016b) asserts that these two endpoints are idealized constructs that cannot exist. According to him, second language users are situated at various points along this continuum. He further posits that different linguistic components may occupy distinct positions on the continuum; for instance, the lexicon might be closer to the right pole, while syntax may be further away from it (Cook 2016b: 9). Multicompetence is dynamic, as the relationships between languages are subject to change. It encompasses not only language transfer but also other types of linguistic interactions, such as code-switching and attrition. Depending on their experiences, multilingual individuals may either increasingly separate the languages over time or, conversely, integrate them more closely.

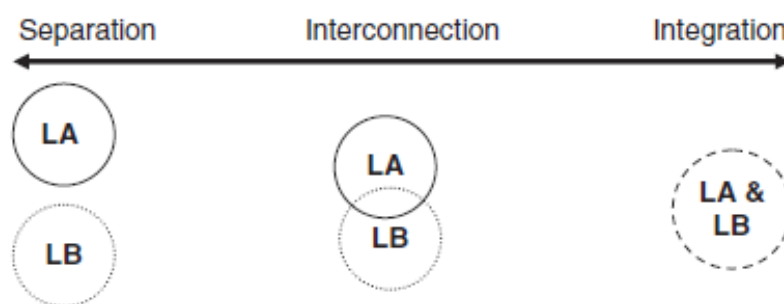


Figure 3.2.1: Cook's continuum of possible relationships between languages in multicompetence (2003: 9, 2016b: 9)

Cook (2016b: 7–19) describes the three premises of multi-competence. Firstly, it pertains to the whole system for all languages (L1, L2, Ln) in a single mind or community and their inter-relationships. Secondly, it posits that L2 users are autonomous from monolingual speakers, indicating that multi-competence is not contingent upon monolingual norms. Thirdly, it affects the whole mind. This final premise can be associated with the linguistic relativity hypothesis, prompting inquiries into how multilingual individuals conceptualize and navigate the cognitive distinctions inherent in their languages.

In conclusion, Table 3.2.1 provides an overview of the definitions of the various phenomena mentioned in the sections above. As demonstrated, various terms are used, each reflecting different theoretical orientations, including cognitive, linguistic, and developmental perspectives. Some terms pertain solely to L1 and L2, while others consider Ln and the interconnections among all languages within the cognitive framework. Furthermore, definitions by scholars such as Selinker, Cook, Jessner, and De Groot highlight the mental representation of languages, positing that multiple languages coexist and interact within a unified cognitive system. Recent definitions incorporate the concept of "nonpredictable and dynamic effects" (Jessner 2003) whereas other models only imply predictable patterns such as those based on structural similarities. In the present thesis, the definition by Jarvis & Pavlenko (2008: 1) is adopted, which states, "the influence of a person's knowledge of one language on that person's knowledge or use of another language" and it is applied at a multimodal level.

Definition	Phenomenon	Type of Influence	Directionality	Scope	Cognitive Framework	Unpredictability	Learning vs. Use
Weinreich (1953/1979)	Interference	Neutral/Negative	Bidirectional (L1 ↔ L2)	Bilinguals	✗	✗	Use
Selinker (1972)	Interlanguage	Neutral	L1 & L2 → IL	Learners	✓	✗	Both
Sharwood Smith & Kellerman (1986)	Crosslinguistic influence	Neutral	Multidirectional	Multilinguals	✗	✗	Both
Odlin (1989)	Transfer	Positive/Negative	Any previously acquired → TL	Learners	✗	✗	Both
Cook (1991)	Multi-competence	Neutral	Bidirectional (L1 ↔ L2) but multidirectional according to Cook (2003)	Bilinguals/Multilinguals	✓	✗	Both
De Angelis & Selinker (2001)	Interlanguage transfer	Neutral	L2 ↔ L3	Multilinguals	✓	✗	Both
Cook (2003)	Multi-competence	Neutral	Multidirectional	Bilinguals/Multilinguals	✓	✗	Both
Jessner (2003)	Crosslinguistic interaction	Positive/Negative	Multidirectional	Multilinguals	✓	✓	Both
Jarvis & Pavlenko (2008)	Crosslinguistic influence	Neutral	Any language → another	All speakers	✓	✗	Both
De Groot (2011)	Crosslinguistic influence	Positive/Negative	Non-selected → selected or previously acquired language → L _n acquisition	Bilinguals/Multilinguals	✓	✓	Both
Cook (2016)	Multi-competence	Neutral	Multidirectional	Individuals/Communities	✓	✗	Both

Table 3.2.1: Comparison of the definitions of crosslinguistic influence and related phenomena

3.2.3. Characteristics of crosslinguistic influence

This section aims to describe the different characteristics of crosslinguistic influence such as transfer directionalities, influential factors, and contexts of occurrence. It is partially based on Jarvis and Pavlenko's (2008) categorization.

3.2.3.1. Directionality

Crosslinguistic influence can manifest in various directions. Forward transfer occurs from the first language (L1) to the second language (L2), whereas reverse transfer takes place from L2 to L1. Additionally, crosslinguistic influence may be lateral, occurring between languages acquired or learned subsequent to L1. Moreover, transfer can be bidirectional, encompassing both forward and reverse directions simultaneously (i.e., L1 to L2 and L2 to L1), or it may involve bidirectional lateral transfer, such as from L2 to L3 and from L3 to L2. The first language of speakers is also subject to transfer; however, it holds a distinct status compared to languages learned thereafter, where the sequence of acquisition is less significant (Jarvis & Pavlenko 2008: 22). Interactions can be observed not only between two languages but also among three or more languages (Dewaele 1998; Cenoz, Hufeisen & Jessner-Schmid 2001; Cenoz 2003). The third language can be influenced by both the first language and the second language, just as L1 and L2 can be influenced by L3, despite L3 being acquired at a later stage.

3.2.3.2. Influential factors

One of the major purposes of crosslinguistic research has been to identify the factors that favor or reduce/inhibit CLI. They can be divided into three categories: factors can be associated with language learner, the languages themselves (typological distance) and context (degree of formality) (Jessner, Megens & Graus 2016). The first category refers to the learner's proficiency in the different languages, their language exposure, recency of use and order of acquisition. The second group encompasses the typological distance between the languages and the last one the degree of formality. In addition to the learner's proficiency levels, it is also important to consider their perception of their own interlanguage competence (De Angelis & Selinger 2001). In the same vein, the learner's perception of language distance – what Kellerman (1977) called psychotopology – can differ from the language distance established by linguists. Psychotopology also plays a role

in CLI (Kellerman 1977; De Angelis & Selinker 2001). Furthermore, “individual and contextual factors such as age, anxiety, metalinguistic awareness and characteristics of the interlocutors” can also play a role (Cenoz 2003: 104).

The characteristics of transferred items also matter. Based on Dell's (1995) perspective that phonologically and semantically similar words can be activated during the lexical retrieval process, De Angelis and Selinker (2001) propose that words that are phonologically similar (and potentially those that are semantically similar) could also be activated across language systems. This implies that when the speaker needs to compensate, the different systems become activated, placing at least two items in competition (De Angelis & Selinker 2001). Kellerman (1995) postulated that more prototypical items of the L1 were better candidates for transfer.

De Angelis (2005: 11) formulated two hypotheses as to why learners would use words from their L2 in their L3. The first one is perception of correctness: multilingual individuals resist incorporating L1 linguistic knowledge into interlanguage when they have other options because they perceive L1 words as wrong. This factor might be related to the learner's level of proficiency in L3 (De Angelis 2005). The fact that learners are not always able to tell whether a word from a Ln is correct or incorrect in another Ln leads to more acceptance for Ln words into target language production (De Angelis 2005). Her second hypothesis is association of foreignness: learners assign to Ln the status of foreign languages, just as they do for their target language. It thus results in a cognitive association (De Angelis 2005).

3.2.3.3. Area of language use

Furthermore, Jarvis & Pavlenko (2008) and Jessner, Megens & Graus (2016) reported on studies that found that CLI also occurs at the phonetical, phonological, orthographic, lexical, semantic, morphological, syntactic, discursive, pragmatic and sociolinguistic levels.

3.2.3.4. Type of knowledge

The type of language knowledge (implicit vs. explicit) could also play a role in CLI. It was first believed that CLI was more likely in classroom contexts than it is in naturalistic

environments (e.g., Dulay, Burt, & Krashen, 1982), but more recent work has suggested just the contrary because explicit knowledge raises the awareness of the differences between the first and target languages. (Odlin 1989, Jessner, 2006). The differences between naturalistic learning and classroom learning correspond to the differences between explicit versus implicit knowledge. Explicit knowledge could reduce the chances of negative transfer as a consequence of incomplete implicit knowledge and/or discrepancies between learners' perceived similarities and the actual similarities and differences between the target language and the language(s) they already master. Nevertheless, Jarvis & Pavlenko (2008) argue that the inquiry regarding which environment most effectively facilitates transfer is somewhat misleading. Studies seemed to focus more on performance-related effects rather than learning-related effects on transfer. According to them, it is evident that learning-related transfer occurs in both environments, and the assumption is that it affects learning differently across various environments. In a classroom setting, learners are more inclined to consciously compare the source and target languages, engage their explicit memory, and use conscious monitoring. These strategies and processes may assist them in avoiding certain types of negative transfer, such as those related to word order and pragmatic errors, while simultaneously fostering other types of interlingual identifications, such as those between L1 and L2 content words and functional morphology. In a naturalistic environment, where the target language is acquired in a L1 context where the emphasis is primarily on meaning and communication, learners predominantly engage their implicit memory with the new words, structures, conceptual distinctions, and methods of expressing events and relationships they encounter. Conversely, individuals' meaningful, contextualized, and rich experiences with novel conceptual distinctions, manners of describing events and relationships, and approaches to structuring discourse may enable them to acquire precise implicit knowledge in areas of language use where classroom learners may possess limited implicit or explicit knowledge. Alternatively, classroom learners may have accurate explicit knowledge but commit transfer-related errors when relying solely on their implicit knowledge. Learning-related effects are evident in both classroom and naturalistic settings; however, these effects can differ significantly due to the distinct engagement of implicit versus explicit memory (Jarvis & Pavlenko 2008: 206–207; Pavlenko 2000).

3.2.3.5. Cognitive level

The precise nature of cross-linguistic influence remains ambiguous, particularly regarding whether it entails the mental transference of information between linguistic systems or merely the establishment of mental connections between them. Nonetheless, it is increasingly evident that multiple cognitive levels may exist at which the languages known by an individual can influence one another. Slobin (1996) implicitly differentiates between the levels of thought, thinking for speaking, and speaking. According to Slobin, CLI effects may manifest at the latter two levels (Jarvis & Pavlenko 2008: 22–23).

3.2.3.6. Mode

CLI does not only occur in production (i.e. productive mode) and acquisition but also in comprehension (i.e. receptive mode), interpretation, conceptual representation, tip-of-the-tongue states and “nonverbal communication” (Jarvis & Pavlenko 2008: 14; Jessner, Megens & Graus 2016: 198).

3.2.3.7. Form

Cross-linguistic influence can manifest in two distinct forms: verbal and what they consider “nonverbal” (Jarvis & Pavlenko 2008: 25), which is rather co-verbal. Studies have demonstrated that gestures can provide insights into L2 development (Gullberg 2006; McCafferty & Stam 2008). Several studies have also shown that gestures are influenced by the speakers’ language(s) (Brown & Gullberg 2010; Gullberg 2009b; Gullberg 2009a; Kellerman & van Hoof 2003; Negueruela et al. 2004; Stam 2008) (Jarvis & Pavlenko 2008: 25). This will be further discussed in Section 3.5.2.

3.2.3.8. Intentionality

Crosslinguistic influence can be either intentional or unintentional. This dichotomy is similar to the view of CLI as a communicative strategy versus the result of formed mental associations between elements of both languages. However, this distinction is not so straightforward and there have been few studies on this.

3.2.3.9. Manifestation

CLI manifestation can be overt or covert. Overt transfer refers to instances where a language user identifies similarities between patterns, structures, forms, or meanings in the source language and those in the target language. In contrast, covert transfer encompasses situations where a language user either relies on patterns, structures, forms, or meanings from the source language that are absent in the target language or avoids structures present in the target language but not in the source language (Jarvis & Pavlenko 2008).

3.2.3.10. Outcome

Lastly, the outcome of CLI can be either positive or negative. In the former scenario, CLI results in a correct structure, whereas in the latter, it leads to an error.

3.2.3.11. Conclusion

Crosslinguistic influence is subject to various factors and can manifest in diverse contexts and at multiple levels.

3.2.4. Relationships between concepts and words in multilingual individuals

Concerning the semantic relationship between words and concepts, Pavlenko (2005: 438) proposes a framework that features seven possible relationships between language and thought in multilingual individuals:

- Coexistence: the Sapir-Whorf hypothesis directly implies that the conceptual domains of a first and second language coexist, indicating that bicultural bilinguals may rely on separate conceptual frameworks and express distinct discursive identities when using different languages.
- L1-based conceptual transfer: it involves the influence of the L1 conceptual framework on the learning and usage of an L2, particularly during the initial and intermediate phases of acquiring the L2.
- Internalization: when immigrant bilinguals and language learners in contact situations internalize new ideas, they incorporate L2 vocabulary and the associated concepts into their L1. This process occurs when they recognize the

necessity to highlight distinctions absent in their L1 or to describe new items and ideas unique to the L2 community.

- Shift: the transition from an L1 to an L2 conceptual framework involves altering category prototypes or boundaries during the process of L2 socialization.
- Convergence: the merging of L1 and L2 conceptual areas results in the formation of a unified concept, domain, or system that is distinct from both L1 and L2. This can occur in cases of simultaneous bilingualism or as a consequence of language contact.
- Restructuring: within a conceptual domain it involves a scenario where a transformation is not entirely complete, but certain components might be removed from or added to a concept or the domain itself.
- The attrition of previously acquired concepts entails the erosion of learned ideas, classification schemas, categorical distinctions, or narrative conventions, as evidenced by deviations from categorization patterns based on the first language (L1).

Building upon these conceptual relationships, Bassetti & Cook (2011) introduced a complementary model that further dissects the nuanced interaction between language and conceptualization through specific scenarios. Bassetti & Cook (2011: 172–176) identified four possible relationships between language and conceptualization that they illustrate with the example of lunch (crisp and sandwich) versus *pranzo* (pasta and fish) and that apply to concepts (i.e. one person can have concepts of the different types). Still, they can be characterized by the scenario they use the most.

- One-concept scenario: one concept with two labels from different languages in the L2 learner's mind (either crisp and sandwich or pasta and fish). This scenario is similar to Weinreich's (1979) idea of compound bilingualism;
- Double-concept scenario: two separate concepts and different way of thinking depending on the language they are speaking (lunch = sandwich and crisps and *pranzo* = pasta and fish);
- One-integrated concept scenario: the L1 and L2 concepts are combined into a single one to be situated between the two initial ones (pasta and crisps);
- Original-concept scenario: the L2 user creates their own concept, different from the initial ones (pasta and tea)

This model was designed for bilingualism but for the authors, bilingualism should be considered from a broad perspective. They distinguish between a minimal and a maximal view. In the minimal view, “bilingualism refers to any real-life use of more than one language at whatever level” (Bassetti & Cook 2011: 144) as opposed to the maximal view where bilingualism pertains to mastering two languages with equal fluency in all situations. They also suggest, based on earlier research, that “even a smattering of knowledge” of an L2 can change a language user’s way of thinking (Bassetti & Cook 2011: 144).

While the first model provides a framework for understanding the dynamics between L1 and L2 conceptual domains, the second model is scenario-based and elaborates on the mental representation of concepts. These models intersect at certain points. Specifically, Bassetti and Cook’s double-concept scenario aligns with Pavlenko’s notion of coexistence, the one-integrated concept scenario corresponds to convergence, and the original-concept scenario is akin to the creation of new or restructured concepts. Overall, Pavlenko’s model gives a processual, dynamic perspective on how concepts evolve and interact over time and social context, while Bassetti & Cook’s model provides a snapshot of possible cognitive states for individual concepts.

3.2.5. Conclusion

This section aimed to retrace the evolution of research transfer and characterize crosslinguistic influence. It demonstrated that multilinguals are not merely the sum of three or more monolinguals, nor are they bilingual individuals with an additional language and that interaction between several languages is a natural process (De Angelis & Selinker 2001; Cook 2016b).

3.3. CLIL context in French-speaking Belgium

This section provides contextual information⁸ regarding the characteristics of Content and Language Integrated Learning (CLIL) programs, with a particular focus on late CLIL programs in the French-speaking region of Belgium.

Content and Language Integrated Learning (CLIL) is a pedagogical approach in which courses are taught in a foreign language. It began in Canada in the 1960s and has spread to various locations, including Europe. This method emphasizes the integration of content, communication, cognition, and culture (Ottaviani 2016). There are two primary CLIL programs: early CLIL, which starts in the third year of pre-school, the first or third year of elementary school, and late CLIL, which begins in the first year of secondary education. In the Wallonia-Brussels Federation, early CLIL was introduced in 1989 at kindergarten level and in 1996 at secondary school level (Athénée communal Léonie de Waha n.d.). In Wallonia, CLIL programs may be organized in Dutch, English, and German, as opposed to Brussels, where they are limited to Dutch. The evolution of CLIL programs, from their inception to the present day, reflects a growing interest and adoption within the educational system, as evidenced by recent enrollment figures. In fact, in 2020-2021 (i.e., the year of the first data collection), 19 891 students were enrolled in a CLIL program in secondary schools in the Brussels-Wallonia Federation, among whom 10679 in a Dutch-program (Fédération Wallonie-Bruxelles 2022).

Initially, this methodological approach was experimental in French-speaking Belgium as it was not governed by any legal framework. The first educational decree was issued in 1997, yet it did not explicitly refer to CLIL (Communauté française 1997). CLIL was first mentioned in 1998 (Communauté Française 1998), and a specific circular regarding CLIL programs was published in 2007, with subsequent adaptations made in 2012 (Fédération Wallonie-Bruxelles 2012). The circular for the late CLIL program, which constitutes the primary focus of this study, imposes a partial immersion program, with between eight and 13 50-minute sessions in the target language, inclusive of the L2 course. Institutions may

⁸ For a complete review of CLIL in French-speaking Belgium from a multidisciplinary perspective, see <https://www.uclouvain.be/en/research-institutes/ilc/assessing-content-and-language-integrated-learning-clil>

offer an additional two to four periods dedicated to complementary activities conducted in the target language. The instruction has to be delivered by L1 teachers or teachers with a L1-like proficiency, holding a pedagogical degree, extensive knowledge of the target language, and a functional understanding of French (Fédération Wallonie-Bruxelles 2012). While students undertake final assessments in the target language, the official examinations are administered in French.

Let us now zoom in on the CLIL school that participated in the current study. They initiated the late CLIL program in 2000. Within this program, one-fourth of the curriculum is delivered in Dutch by teachers who have graduated from Dutch-speaking institutions. In the first and second grades, sciences (3 hours) and a combined course of geography and history (4 hours) are instructed in Dutch. In the third and fourth grades, geography (2 hours) and history (2 hours) are taught in the target languages, and students also engage in a one-hour complementary activity. In the fifth and sixth grades, geography (2 hours) and history (2 hours) continue to be taught in the second language (L2). Additionally, students participate in a four-hour L2 Dutch class specifically designed for CLIL students over a six-year period.

The salient feature of this method pertinent to the present study is that the target language is both acquired through courses conducted in the second language (L2) and learned through the language course itself.

3.4. Reference Frameworks and Official Documents on L2 Instruction

This section presents a dual analysis of key texts that inform the conceptualization and institutional framing of second language instruction. First, it examines the CEFR Companion Volume as a foundational reference framework that elaborates on language proficiency levels and descriptors relevant to L2 learning. Second, it reviews a selection of official documents governing L2 teaching, focusing on the occurrence and treatment of specific terms related to gesture and motion. By contrasting these texts, this analysis sheds light on how co-verbal aspects of communication and motion events are recognized—or overlooked—within both pedagogical frameworks and policy documents.

3.4.1. CEFR: Proficiency Levels

The Common European Framework of Reference for Languages: Learning, teaching, assessment (CEFR) offers a detailed descriptive framework of language proficiency, accompanied by a series of Common Reference Levels (A1 to C2) articulated through illustrative descriptor scales (Council of Europe 2020). The salient features of the levels are summarized in Table 3.4.1 (Council of Europe 2020: 175)⁹.

The present study used this framework to ascertain the learners' proficiency levels and evaluate their progression over the years (see Section 4.3.2.4).

⁹ As the text is directly extracted from the document, the British spelling has been intentionally retained.

Proficient user	C2	Can understand virtually all types of texts. Can summarise information from different oral and written sources, reconstructing arguments and accounts in a coherent presentation. Can express themselves spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.
	C1	Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express themselves fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.
Independent user	B2	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in their field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with users of the target language quite possible without imposing strain on either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
	B1	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise while travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.
Basic user	A2	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, usement). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of their background, immediate environment and matters in areas of immediate need.
	A1	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce themselves and others and can ask and answer questions about personal details such as where someone lives, people they know and things they have. Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

Table 3.4.1: Common Reference Levels (extracted from Council of Europe 2020: 175)

3.4.2. References to Motion and Gesture in Official Documents on L2 Instruction

3.4.2.1. Introduction

To assess the extent to which the study's target group may have been educated on the research topic, I conducted a search for the key terms "gesture", "displacement", "motion", "space" and "spatial" (in the relevant language) within the Common European Framework of Reference for Languages: Companion Volume (Council of Europe 2020), "Compétences terminales savoirs requis à l'issue des humanités générales et technologique: Langues modernes" [Terminal skills and required knowledge at the end of general and technological humanities: Modern languages]¹⁰, and the teaching program of the Fédération de l'Enseignement Secondaire Catholique (FESeC) [Catholic Secondary Education Federation]¹¹. This approach enables us to understand how gestures are perceived in language education and the significance attributed to the domain of motion.

3.4.2.2. Gesture

The term "gesture" appears 22 times, with 20 instances pertaining to the use of gestures in conjunction with spoken languages, in the Common European Framework of Reference for Languages: Companion Volume (Council of Europe 2020). These instances are enumerated in Table 3.4.2.

¹⁰ In the Wallonia-Brussels Federation, the language skills students are expected to master by the end of secondary school are compiled in the legal document "Compétences terminales et savoirs requis à l'issue des humanités générales et technologique: Langues modernes" (Fédération Wallonie-Bruxelles 2017).

¹¹ This analysis is limited to this program since the participating school belongs to this network.

Page	Context	Occurrence
30	Plurilingual competence ¹²	“exploit paralinguistics (mime, gesture , facial expression, etc.)”
37	Objectives for beginners	beginners “can make simple purchases where pointing or other gesture can support the verbal reference”
48	Descriptors of overall oral comprehension	Pre-A1 learners “Can understand short, very simple questions and statements, provided they are delivered slowly and clearly and accompanied by visuals or manual gestures to support understanding and repeated if necessary.”
51	Descriptors of understanding announcements and instructions	Pre-A1 learners “Can understand short, simple instructions for actions such as “Stop” , “Close the door” , etc., provided they are delivered slowly face-to-face, accompanied by pictures or manual gestures and repeated if necessary.”
69	Compensation	Key concept: “accompanying gestures to support language”
		A1 learners “can use gestures to support simple words/signs in expressing a need”
		A2 learners “can use an inadequate word/sign from their repertoire and use gestures to clarify what they mean”
72	Descriptors of overall oral interaction	Pre-A1 learners “can ask and answer questions about themselves and daily routines, using short, formulaic expressions and relying on gestures to reinforce the information.”
78	Descriptors of obtaining goods and services	Pre-A1 learners “Can make simple purchases and/or order food or drink when pointing or other gesture can support the verbal reference.”
		A2 learners “can ask (face-to-face) for a medical appointment and understand the reply. Can indicate the nature of a problem to a health professional, perhaps using gestures and body language.”
80	Descriptors of interviewing and being interviewed	A1 learners “can state in simple language the nature of a problem to a health professional and answer simple questions such as “Does that hurt?” even though they have to rely on gestures and body language to reinforce the message.”
		A2 learners “can indicate in simple language the nature of a problem to a health professional, perhaps using gestures and body language.”

¹² Plurilingualism is defined as “the dynamic and developing linguistic repertoire of an individual user/learner” (Council of Europe 2020: 30)

Page	Context	Occurrence
89	Descriptors of asking for clarification	A1 learners “can indicate with simple words/signs, intonation and gestures that they do not understand.”
98	Processing text	“At A2, the learner may need to supplement their limited repertoire with gestures , drawing or expressions embedded from other languages.”
101		A2 learners “Can convey (in Language B) the main point(s) contained in clearly structured, short, simple texts (in Language A), supplementing their limited repertoire with other means (e.g. gestures , drawings, words/signs from other languages) in order to do so.”
124	Building on pluricultural repertoire – Intercultural competence	“the need to take into consideration differences in behaviours (including gestures , tones and attitudes), discussing over-generalisations and stereotypes”
125		B2 learners “can identify and reflect on similarities and differences in culturally determined behavioural patterns (e.g. gestures and speech volume or, for sign languages, sign size) and discuss their significance in order to negotiate mutual understanding.”
142	Fluency	Pre-A1 learners “Can manage very short, isolated, rehearsed utterances using gesture and signalled requests for help when necessary.”
212	Mediating a text	A2 learners “Can convey (in Language B) the main point(s) contained in clearly structured, short, simple texts (in Language A), supplementing their limited repertoire with other means (e.g. gestures , drawings, words/signs from other languages) in order to do so.”
259	Interpreting	A1 learners “can communicate with simple words and gestures what basic needs a third party has in a particular situation.”

Table 3.4.2: Occurrences of "gesture" in Common European Framework of Reference for Languages: Companion Volume (Council of Europe: 2020)

The term "gesture" is associated with beginners in 90% of instances. Notably, gestures are predominantly perceived as a tool that can enhance language acquisition: they facilitate comprehension, aid in fluency, compensate for limited vocabulary, and clarify communication. In the remaining two instances (pp. 124 & 125), gestures are connected to intercultural competence and pertain to B2 students. However, the reference to cultural gestures likely pertains to emblems rather than co-speech gestures. While the significance

of emblems should not be underestimated, it is crucial to recognize co-speech gestures for their intrinsic value, rather than merely as a compensatory mechanism.

In “*Compétences terminales*”, the word “*geste*” [gesture] occurs three times as displayed in Table 3.4.3.

Page ¹³	Context	Occurrence	Translation
19	Oral comprehension to inform oneself and/or take action – A1 level – Strategic resources to formulate hypotheses	“exploiter les indices non linguistiques (gestes , mimiques, regards, indices visuels, pictogrammes...”	make use of non-linguistic cues (gestures , facial expressions, looks, visual cues, pictograms...)
55	Oral comprehension to inform oneself and/or take action – A2 level – Strategic resources to formulate hypotheses	“exploiter les indices non linguistiques (gestes , mimiques, regards, indices visuels, pictogrammes...)”	
101	Oral comprehension to inform oneself and/or take action – B1 level – Strategic resources to formulate hypotheses	“exploiter les indices non linguistiques (gestes , mimiques, regards, indices visuels, pictogrammes...)”	

Table 3.4.3: Occurrences of the term “*geste*” in “*Compétences terminales et savoirs requis à l’issue des humanités générales et technologique: Langues modernes (2017)*”

Here, gestures are regarded as non-linguistic cues, despite their co-verbal nature. Furthermore, co-speech gestures are often undervalued. Students at the A1 to B1 levels are primarily expected to use these cues to aid in oral comprehension. This policy document does not address the use of gestures in speech production and considers gestures primarily as a secondary supportive tool.

¹³ The pages of the document are not numbered. The page numbers mentioned here are based on the numbering of the PDF-document that can be retrieved here: http://www.enseignement.be/download.php?do_id=14559

“Geste” [gesture] appears four times in the FESeC’s teaching program (see Table 3.4.4).

Page	Context	Occurrence	Translation
29	Oral comprehension to inform (oneself) or take action – A2- & A2+ - Strategic resources to formulate hypotheses	“exploiter les indices non linguistiques (gestes , mimiques, regards, indices visuels, pictogrammes ...) ”	make use of non-linguistic cues (gestures , facial expressions, looks, visual cues, pictograms...)
42	Oral comprehension to inform (oneself) or take action – B1- & B1+ - Strategic resources to formulate hypotheses	“exploiter les indices non linguistiques (gestes , mimiques, regards, indices visuels, pictogrammes ...)”	
72	Example of learning activities – Objective: Oral production with interactions – A2- Preparatory activity: use and understand the non-verbal	“Parfois les gestes ou les mimiques en disent plus long que les mots. Entraîne-toi à comprendre ce que ces personnes expriment. À côté de chacune des affirmations listées ci-après, note le chiffre correspondant à un des smileys suivants”	Sometimes gestures or facial expressions say more than words. Practice understanding what these people are expressing. Next to each of the statements listed below, write down the number that matches one of the following smileys
84	Example of a learning activity – Objective: Oral production with interactions – A2+ - Preparatory activity: identify the non-verbal indicators and communication strategies	“Stratégie travaillée : identifier les indicateurs non-verbaux, les stratégies de communication spécifiques à l’oral (regard, gestes , mimiques, intonation...)...”	Worked-on strategy: identifying non-verbal indicators, specific oral communication strategies (eye contact, gestures , facial expressions, intonation...)...

Table 3.4.4: Occurrences of the term “geste” in the teaching program of the FESeC (2018)

In alignment with the content of “*Compétences terminales*”, gestures are regarded as non-linguistic cues that students at levels A2 to B1+ should use to enhance oral comprehension. Furthermore, the educational program advocates for teachers to increase students' awareness by engaging them in exercises that require the identification of "non-

verbal cues" and the interpretation of gestures and facial expressions (FESeC 2018: 72, 84). However, the co-verbal status of co-speech gestures and their functions in language production remain unacknowledged.

In conclusion, the significance and functions of co-speech gestures are significantly undervalued in the Common European Framework of Reference for Languages: Companion Volume (Council of Europe 2020), "Compétences terminales et savoirs requis à l'issue des humanités générales et technologique: Langues modernes (2017)" (Fédération Wallonie-Bruxelles 2017), and the curriculum of the Federation of Catholic Secondary Education. This analysis suggests that gestures are not systematically incorporated into language instruction in secondary education. At best, students are made aware of gestures as a compensatory strategy for addressing challenges in comprehension and production. At worst, gestures are entirely omitted from language instruction. Given the little importance attached to gestures in these documents, no search was conducted in previous versions.

3.4.2.3. Motion events

In the Common European Framework of Reference for Languages: Companion Volume (Council of Europe 2020), the term "displacement" does not occur. In contrast, the term "*déplacement*" [displacement] occurs five times in the document on terminal skills and the FESeC's teaching program as displayed in Table 3.4.5.

Source	Context	Occurrence	Translation	Number of occurrences (N)
Fédération Wallonie-Bruxelles 2017: 161, 175, 185	Subsection of the thematic field "travel"	<i>"Transports et déplacements"</i>	Transportation and displacement	3
FESeC 2018: 101, 109, 113				3
Fédération Wallonie-Bruxelles 2017: 175, 185	Subsection of the thematic field "travel"	<i>"Actions de base associées à des déplacements liés à la vie quotidienne"</i>	Basic actions associated with displacements related to daily life	2
FESeC 2018: 109, 113				2

Table 3.4.5: Occurrences of the term "déplacement" [displacement] in the "Compétences terminales" and teaching program of the FESeC

"Déplacements" is mentioned three times as part of the general title "*Transports et déplacements*" [Transportation and displacement] (Fédération Wallonie-Bruxelles 2017: 161, 175, 185; FESeC 2018: 101, 109, 113) and two times in "*actions de base associées à des déplacements liés à la vie quotidienne*" [basic actions associated with displacements related to daily life] (Fédération Wallonie-Bruxelles 2017: 175, 185; FESeC 2018: 109, 113). It is a subsection of the thematic field travel.

The terms "space" and "spatial" are present in the Companion Volume (Council of Europe 2020), albeit not in the intended meanings. They are predominantly used to denote signing space. In contrast, the term "*espace*" appears 31 times within two phrases across the resources for levels A1+, A2, B1, and B2- in "*Compétences terminales*" (Fédération Wallonie-Bruxelles 2017) as illustrated in Table 3.4.6.

Page	Context	Occurrence	Translation	Number of occurrences (N)
18, 25, 32, 39, 46, 54, 63, 71, 81, 89, 99, 110, 121, 130, 139, 148	Resources for levels A1+, A2, B1, and B2-	<i>"Situer dans le temps et dans l'espace"</i>	Situate in time and space	16
19, 26, 33, 40, 47, 55, 64, 73, 81, 91, 100, 111, 123, 131, 140	Resources for levels A1+, A2 and B1	<i>"Répertoire grammatical utile pour situer dans l'espace"</i>	Useful grammatical repertoire for situating in space	15

Table 3.4.6: Occurrences of the term "espace" in "Compétences terminales"

The first phrase is "*situer dans le temps et dans l'espace*" [situate in time and space] (Fédération Wallonie-Bruxelles 2017: 18, 25, 32, 39, 46, 54, 63, 71, 81, 89, 99, 110, 121, 130, 139, 148), and the second is "*répertoire grammatical utile pour situer dans l'espace*" [useful grammatical repertoire for situating in space] (Fédération Wallonie-Bruxelles 2017: 19, 26, 33, 40, 47, 55, 64, 73, 81, 91, 100, 111, 123, 131, 140).

Within the FESeC teaching program, the term "espace" is mentioned 14 times (see Table 3.4.7).

Page	Context	Occurrence	Translation	N
11	Domain where culture can be integrated into the practice of the five skills	<i>“La perception de l’espace et du temps : le calendrier (jours de fête), la ponctualité, la proxémie, l’organisation des villes, de l’habitat...”</i>	The perception of space and time: the calendar (holidays), punctuality, proxemics, the organization of cities, of housing...	1
30, 32, 35, 39, 41, 43, 45, 48, 51, 53	Resources for levels A2 and B1	<i>“Répertoire grammatical utile pour situer dans l’espace”</i>	Useful grammatical repertoire for situating in space	10
118	Appendix 2: language functions to support receptive skills	<i>“Comprendre quelqu’un qui veut situer dans le temps et l’espace”</i>	To understand someone who wants to situate in time and space	1
122	Appendix 3: language functions to support productive skills	<i>“S’informer: situer dans le temps et l’espace”</i>	To inform (oneself): situate in space and time	1

Table 3.4.7: Occurrences of "espace" in the FESeC's teaching program

"Espace" appears once as a domain where culture can be integrated into the practice of the five skills (FESeC 2018: 11), ten times in the phrase "*répertoire grammatical utile pour situer dans l'espace*" [useful grammatical repertoire for situating in space] (FESeC 2018: 30, 32, 35, 39, 41, 43, 45, 48, 51, 53) as resources for levels A2 and B1, once in Appendix 2 as a language function to support the receptive skill "*comprendre quelqu'un qui veut situer dans le temps et l'espace*" [to understand someone who wants to situate in time and space] (FESeC 2018: 118) to be acquired at level A1, and once in Appendix 3 as a language function to support the productive skill "*(s')informer: situer dans le temps et l'espace*" [to inform (oneself): situate in space and time] (FESeC 2018: 122) to be learned at level A1. Lastly, the terms "*mouvement*" and "motion" are absent from all documents in the context of a motion event.

In conclusion, it appears that the field of motion events receives minimal attention within educational curricula. The focus is primarily on daily movements and spatial orientation, which are predominantly addressed at the introductory stages of second language acquisition. This suggests that these topics are explored only at a fundamental level. Given the little importance attached to motion events in these documents, no search was conducted in previous versions.

3.5. Thinking, Speaking and Gesturing in a Second Language

In Section 2.3, we saw that gestures differ across languages. They co-occur with different speech units and convey different semantic components. Given their integral role in the communication process, they should be incorporated into second language research. Gestures serve as indicators that elucidate the thinking-for-speaking patterns of second language learners (e.g., Gullberg 2006; Stam 2018; Lopez-Ozieblo 2022).

This first part of the section focuses on L2 thinking-for-speaking patterns while Section 3.5.2 explores the L2 multimodal thinking-for-speaking patterns. Lastly Section 3.5.3 provides some concluding remarks.

3.5.1. Thinking-for-speaking in a Second Language

Even though this section is entitled “Thinking-for-speaking in a Second Language”, it also includes findings on bilingual individuals. The first part is dedicated to self-propelled motion, the second part to location and the third part to caused location.

Self-propelled motion

L1 influence is not always consistent as shown by Cadierno (2004). She found that the learners’ first language (Danish, SF language) influenced their elaboration of the path of motion: they displayed a higher degree of complexity than L1 Spanish speakers by either using redundant or anomalous path particles or by overusing prepositional phrases specifying the ground of movement. On the other hand, they did not transfer the L1 pattern of conflating multiple path elements into a single clause. Subsequently, Cadierno & Ruiz (2006) compared advanced L2 Danish-speaking learners of Spanish (i.e., two typologically different languages) with advanced L2 Italian-speaking learners of Spanish (i.e., two verb-framed languages). They did not find any significant differences between

the two groups in terms of verb use. Instead, they concluded that the learners had reached such a high proficiency level that they used a similar number of motion verbs in Spanish as L1 speakers. Still, both groups used redundant but accurate directional adverbs, which suggests that it is part of the developmental patterns (Cadierno & Ruiz 2006). In addition, only L1 Danish learners produced ungrammatical sentences to convey boundary-crossing events. Lastly, L1 Danish speakers made a significantly higher number of clauses specifying ground like source, medium or goal in L2 Spanish than both L1 Spanish speakers and L1 Italian speakers in L2 Spanish. These findings are to be related to their L1 thinking-for-speaking pattern.

Larrañaga et al. (2012) found that the speakers' L1 keeps influencing the thinking-for-speaking pattern of the L2 even in later stages. They found that the expression of boundary crossing events in L2 Spanish remains difficult for L1 English speakers even if they stayed abroad.

Brown & Gullberg (2013) examined the clausal packaging of manner and path in L2 English by two groups of L1 Japanese speakers with an intermediate level: one who lived in Japan and one who lived in the United States of America to study the effect of immersion. The researchers expected to find differences between L1 English and L1 Japanese in terms of clausal packaging in line with previous studies, but they found that monolingual L1 Japanese speakers also predominantly used single-clause constructions. Even though there appeared to be no difference between the two languages, both groups of bilingual speakers used significantly more multi-clause constructions in both Japanese and English. The author interpreted the results as L1-L2 convergence as their performance was different from that of both monolingual groups, yet consistent across their own L1 and L2. This convergence could be accounted for by bi-directional crosslinguistic influences at the lexical level: influenced by English, they increased their use of manner verbs in Japanese, which constrains the expression of path and leads to multi-clause constructions. Simultaneously, the Japanese preference for path verbs influenced their L2. Brought together, these influences could account for the use of separate clauses for manner and path, each expressed in a main verb in both languages (Brown & Gullberg 2013: 489–490).

Anastasio (2023) studied the construal of motion events in a storytelling task conducted by L2 French learners and L2 Italian learners, at both intermediate and advanced

proficiency levels, whose first language is either typologically similar to the target language (Italian or French) or typologically distant (English). The findings indicate that intermediate-level L2 productions exhibit similarities across different L1 backgrounds, suggesting no specific L1 effect in L2 acquisition at this stage. However, crosslinguistic influence becomes apparent at the advanced level, particularly when the source language and target language share similar formal structures, such as verb-particle constructions. Learners with a Romance language background tend to seek similarities in the L2 rather than exploring the specific alternatives of their target language, despite the partial linguistic proximity between French and Italian.

Lastly, Treffers-Daller & Tidball (2015) proposed four reconceptualization scenarios:

- Transfer: “L2-users are significantly different from monolingual users of L2 but not from monolingual users of L1”;
- Restructuring: “the L2-users are significantly different from monolingual users of L1 but not from monolingual users of L2”;
- Creative/hybrid: “the L2-users are significantly different from both groups of monolinguals”;
- Convergence: “the L2-users are not significantly different from either group of monolinguals” (Treffers-Daller & Tidball 2015: 151)¹⁴

In order to evaluate this proposal within the domain of event conceptualization, an analysis was conducted on the frequency distribution of path, manner, caused motion, and deictic verbs in narratives elicited from both intermediate and advanced learners of French, as well as L1 speakers of French and English. The findings indicated that the productions of intermediate-level learners aligned with a creative/hybrid scenario, as their motion expressions significantly differed from those of L1 English and French speakers, with the exception of path, which was verbalized in a target-like manner at an early stage. Advanced learners demonstrated the ability to reconceptualize motion in the second language concerning manner and path; however, they continued to encounter difficulties with deictic verbs and caused motion. The most compelling evidence of first

¹⁴ The page number is an estimation as I only had access to the preprint version of the article.

language transfer was observed in the verbalizations of intermediate-level learners, particularly in events involving boundary crossing.

Location

Concerning location events, the subtle nuances of Dutch posture verbs predicted that it would be difficult for learners to master them (Lemmens 2002; Lemmens & Slobin 2008; Lemmens & Perrez 2010; Lemmens & Perrez 2012; Lemmens & Perrez 2018). In fact, French-speaking learners of Dutch must undergo a semantic reconstruction process as they have to move from one generic category in their L1 to multiple specific ones in their L2. This prediction was confirmed : French-speaking learners of Dutch underuse posture verbs and occasionally overuse them (especially *staan* [stand]) in contexts where they should not use any or confuse them (Lemmens & Perrez 2010). Still, learners seem to be aware of some semantic distinctions between the verbs and exploit them in a way that could be similar to the developmental patterns L1 speakers go through. Surprisingly, more advanced learners did not use posture verbs more accurately, but a deeper analysis of the data revealed that even though there were more incorrect uses of posture verbs in the descriptions of advanced learners, they developed strategies that were more similar to those of L1 Dutch speakers as their proficiency level increased (Lemmens & Perrez 2012). This finding suggested that they were gravitating towards the awareness of the strong locative character of Dutch. Lemmens & Perrez (2018: 142) built upon these findings and identified four developmental stages: (1) “the frequent use of presentational constructions with neutral verbs” (i.e., *er is/zijn...* [there is/are]) which they qualified as a compensation strategy, (2) “basic locative constructions with neutral verbs” (i.e., figure + *zijn* [be] + location), (3) basic locative constructions with a posture verb and (4) “presentational constructions with posture verbs”. Lastly, L2 learners stand in the middle between the train and onions patterns as they combine the locative features of both their L1 and their L2.

Caused location

Alferink & Gullberg (2014) examined the expression of placement events by Belgian French-Dutch bilinguals and found that they do not maintain two distinct categories in Dutch as monolingual speakers do. In fact, they overused *leggen* and used it to describe both horizontal and vertical scenes. The authors discuss convergence as a potential

explanation, where two languages in a bilingual mind move closer together. This would lead to a more general system in Dutch as it loses a distinction that is not present in French.

3.5.2. Multimodal thinking-for-speaking patterns in L2

This section looks at the expression of motion events in L2 speech and gestures. The first part focuses on self-propelled motion, the second on caused location and the last one presents some findings on the transfer of gesture rate.

Self-propelled motion

Negueruela et al. (2004) investigated to what extent English-speaking learners of Spanish and Spanish-speaking learners of English with an advanced level and who had lived in the L2 context for at least a year, had shifted to their L2 thinking-for-speaking pattern. The participants were asked to tell *Frog Goes to Dinner* (Mayer 1979). They found that L2 English learners differed from L1 English speakers in terms of synchronization between speech and gestures: while L1 speakers made path gestures while uttering the satellite and sometimes the ground noun phrase, L2 speakers made these gestures while expressing the ground noun phrase or verb. L2 Spanish learners also differed from L1 speakers in this matter: even though they made a few gestures at the same time as the verb as L1 speakers, they also made some while uttering the satellite, which never occurred in L1 Spanish. Their path gestures also co-occurred more frequently with the ground noun phrase than in L1 Spanish. In terms of semantic components, L2 English speakers' manner gestures accompanied utterances that did not feature any manner component in most cases while L2 Spanish speakers tended to make manner gestures and express manner in speech. In other words, they followed the patterns of their L1 in this matter. Negueruela and colleagues concluded that the learners had not shifted to their L2 thinking-for-speaking pattern.

Stam (2006; 2008) analyzed how Spanish-speaking learners of English with (1) an intermediate proficiency level and (2) an advanced proficiency levels described motion events in speech and gestures. The participants were asked to recount two scenes of *Canary Row* (1950): Sylvester climbing up inside the drainpipe and Sylvester and the bowling ball rolling down, out of the drainpipe, down the street and into a bowling alley. Stam (2006) observed that the participants uttered more clauses in L2 English than the

L1 English speakers, which corresponds to their L1 pattern. Only advanced learners accumulated path components but there were few cases. In addition, she found many instances without any satellites. Concerning gestures, Stam (2006; 2008) observed that learners made more gestures while uttering the satellite or verb and satellite than in their L1 but they still produced gestures while uttering the verb more often than L1 English speakers. In addition, the learners did not add path components in gestures. Their thinking-for-speaking pattern is thus between the English and the Spanish ones. Stam (2010; 2015) then examined if one of the learners showed any developmental patterns in her L2 thinking-for-speaking pattern after nine and fourteen years (i.e., in 2006 and 2011). The learner's path expression changed in that she used satellites in 2006 and 2011, but her expression of manner stayed intact. Her gesture rate was lower in 2011 than in 2006 than in 1997 even though she uttered a similar number of clauses in 1997 and 2006. Her speech and gestures became less segmented over time and thus more similar to L1 English speakers'. Furthermore, she kept expressing manner in gesture without encoding it in speech in 2006 but in contrast, her manner gestures accompanied manner in speech in 2011, which suggests that her gestural expression of manner started shifting toward an English pattern. From 1997 to 2006, the proportion of path gestures occurring concurrently with the satellite remained relatively constant. In contrast, the proportion of path gestures co-occurring with the verb and other elements decreased, while the proportion associated with the ground noun phrase and multiple elements increased. Between 2006 and 2011, the percentage of path gestures co-occurring with both the satellite and the ground noun phrase remained approximately stable. However, the percentage associated with the verb increased, the percentage co-occurring with multiple elements experienced a slight increase, and the percentage associated with other elements decreased (Stam 2015). Lastly, her speech and gestures still differed from a L1 speaker's in 2011, as she continued to produce separate boundary-crossing gestures, which is a Spanish pattern.

Kellerman & van Hoof (2003) examined the gestures of L2 Dutch-speaking English speakers and L2 Spanish-speaking English speakers. They found that Spanish speakers kept making path gestures while uttering the verb in English as they do in Spanish. It can thus be considered as a case of transfer. Surprisingly, Dutch speakers also made path gestures while uttering the verb more often than while uttering the satellite even though

more than half of their path gestures co-occur with the satellite in their L1. The authors do not know how to account for this finding.

Choi & Lantlof (2008) findings suggest that there was a shift towards the L2 thinking-for-speaking patterns for both L2 English speakers and L2 Korean speakers when it comes to the expression of path. In fact, they found that L2 English speakers' path gestures co-occurred with the satellite and ground noun phrase as in L1 English and that L2 Korean speakers' path gestures co-occurred with the ground noun phrase, suffix or verbs when they expressed spontaneous motion. However, there was no shift to the Korean TFS pattern when it came to caused motion events as they did not use the causal path verbs expected. Concerning manner, both groups of L2 speakers kept using their L1 pattern. L2 English speakers did not encode manner as often as L1 speakers and when they did, they did not accompany their utterance with manner gestures. Similarly, L2 Korean speakers retained their L1 pattern and focused on manner.

Yoshioka & Kellerman's (2006) analysis of the expression of ground introduction by L2 Dutch-speaking Japanese learners showed that they tended to do so in verbal phrases and that ground served to give more information on the action performed by the character(s). In other words, L2 learners did not introduce ground as L1 Japanese speakers do but rather kept behaving as in their L1. Concerning gestures, half of the gestures they made while introducing the ground depicted action or direction, as they did in their L1. Still, they made more gestures while introducing the ground than in their L1.

Brown & Gullberg (2008) found that there is a bidirectional interaction between the L1 and L2 also at the gestural level even with an intermediate proficiency level. They looked at how L2 Japanese-speaking English learners expressed manner of motion in speech and gestures in both their L1 and L2. The participants were asked to retell *Canary Row* (1950). They selected four motion events for the analysis (climb through, roll down, clamber up, swing across). They found that Japanese speakers encoded manner less often in L2 English than L1 English speakers, but it did not seem to be due to a lack of vocabulary. They explained this finding rather by the influence of their first language in rhetorical patterns. Concerning gestures, they found fewer manner fog gestures in L2 English than L1 monolingual Japanese descriptions. This suggests that manner fog gestures do not aim at replacing speech in L2 descriptions and were not used as a compensatory strategy

(Gullberg 1998; Brown & Gullberg 2008). Lastly, learners differed significantly in their L1 and L2 from Japanese-only speakers in that they encoded manner in speech without accompanying it in gestures in most cases. In the same vein, Brown (2008) found that L1 Japanese speaking learners of English used more observer viewpoints gestures in both their L1 and L2 as L1 English speakers did rather than character viewpoint gestures as L1 Japanese people did. Lastly, Brown & Gullberg (2010) noticed that while monolingual speakers of Japanese exhibited the same pattern as other VF languages, L1 Japanese speakers who also know English conveyed significantly more path components per clause and used mixed lexicalization patterns in their L1.

Caused location

Concerning placement events, Gullberg (2009a) found that the expression of these events in Dutch is difficult for L1 English speakers because of the specificities of *zetten* and *leggen*. They tended to overgeneralize the use of *zetten* and underuse *leggen* and used other types of verbs such as dummy *doen* [do] and intransitive verbs (including posture verbs). Lastly, they did not tend to use gestures to express object-related information that they did not convey in speech (Gullberg 2009a: 235) and focused on the path to the ground. Similarly, L1 Dutch speakers tended to incorporate objects in gestures when describing placement events in L2 French (Gullberg 2011) and also when they describe placement events in English (Hoetjes 2018). They did it more often than L1 French speakers but less frequently than L1 Dutch speakers (Gullberg 2011). They pointed out that learners tend to have their own behavior which is to be situated between their L1 and L2 patterns (Gullberg 2011) and even though their speech was L1-like, their gestures were not (Hoetjes 2018).

Gesture rate

Lastly, Pika, Nicoladis & Marentette (2006) investigated whether the speakers' gesture rates in a second language could be influenced by the gesture rate of their L1. Concretely, they compared the English descriptions of French-English bilinguals and Spanish-English bilinguals to English monolinguals to determine whether there were any gestural transfers from a high-frequency gesture language to a low-frequency gesture language. English was suggested to be a low-frequency language and French and Spanish were assumed to be high-frequency languages. The participants were asked to recount fragments from *Pink Panther*. Overall, the authors found that monolinguals gestured less.

Bilinguals used more iconic, deictic and conventional gestures and there was a significant effect for iconic gestures. Bilinguals made a similar number of gestures in their other language. This shows that gesture rate is transferable. It may be due to the fact that they lived in a country where their other language was spoken. In any case, transfer was even more significant for iconic gestures, which reinforces the idea that they are close to speech (Pika, Nicoladis & Marentette 2006). However, as there were only ten speakers per group, the interindividual differences have a considerable influence on the findings.

3.5.3. Conclusion

Numerous studies have investigated the expression of motion events in second language acquisition. Some of these studies have concentrated on voluntary motion, while others have examined caused motion. Additionally, certain research has compared typologically distinct languages, whereas others have focused on languages within the same typological category. Furthermore, some studies have explored unidirectional transfer, while others have considered bidirectional transfers. A number of investigations have solely focused on speech, whereas others have incorporated gestures. Finally, some studies have concentrated on intermediate learners, while others have examined advanced learners.

Overall, these studies have demonstrated the challenges learners face in transitioning from their first language thinking-for-speaking patterns to those of a second language, both in verbal expression and gesture. This difficulty can be attributed to the complexity involved in expressing motion events. L2 learners must not only comprehend the manner or path-character of the target language but also adhere to its linguistic constraints. Additionally, they must accurately encode the appropriate semantic components in gestures and execute them at the correct moments.

3.6. Conclusion to Chapter 3

This chapter has aimed at giving an overview of second language acquisition. It first introduced crosslinguistic influence which has been a significant area of study in second language acquisition research. It briefly retraced the evolution of research on transfer, interlanguage (i.e., a distinct linguistic system developed by learners) and multi-competence (i.e., the integration of L1 and L2 interlanguage within a learner's cognitive framework) before explaining the characteristics of crosslinguistic influence (Selinker

1972; Jarvis & Pavlenko 2008; Cook 2016b among others). CLI can occur in multiple directions (from L1 to L2, from L2 to L1 or from L_n to L_n) and it can be influenced by factors related to the language learner, typological distance between the source and target language and the degree of formality of the context (Jessner, Megens & Graus 2016). Both implicit and explicit language knowledge may affect the occurrence of CLI. Crosslinguistic influence can be (un)intentional, (c)overt and result in positive or negative outcome (Jarvis & Pavlenko 2008). Lastly, two models on the relationships between words and conceptualization were presented.

The third section has presented the CLIL context in French-speaking Belgium. It has briefly retraced its history, and it has explained the peculiarities of this teaching format. The fourth section has provided a thorough analysis of educational curricula, which aimed at determining the importance of motion events and gestures in legal documents and the FESeC's teaching program. The analysis revealed that the significance of co-speech gestures is underestimated in the Common European Framework of Reference for Languages: Companion Volume (Council of Europe 2020), "Compétences terminales et savoirs requis à l'issue des humanités générales et technologique: Langues modernes (2017)" (Fédération Wallonie-Bruxelles 2017), and the curriculum of the Federation of Catholic Secondary Education. In the same vein, motion events are not recognized as such. Only daily movements and spatial orientation are mentioned at introductory stages of second language acquisition, which implies these topics are approached only at a fundamental level.

The last section explored L2 (multimodal) thinking-for-speaking patterns. The studies on the thinking-for-speaking patterns in speech have revealed that thinking-for-speaking in a L2 is complicated. In addition, learners seem to follow developmental patterns on the one hand and be influenced by a L_n on the other hand. They are most of the time between the two thinking-for-speaking patterns, exhibiting characteristics of their L1 in their L2 or vice versa and characteristics of their target language. Learners with an advanced proficiency level seem to be gravitating towards their L2 patterns but still show L1 patterns when speaking in their L2.

The studies on the multimodal thinking-for-speaking patterns have shown that these patterns are very difficult to master for L2 learners. None of the studies mentioned here

found learners who had completely shifted to their L2 multimodal thinking-for-speaking pattern. In addition, bidirectional interactions were found also at the gestural level even in learners with an intermediate level (Brown & Gullberg 2008). This finding suggests that interactions are probably multidirectional at the gestural level as they are at the speech level.

PART 2:

DESCRIBING MOTION EVENTS IN FRENCH AND DUTCH AS L1 AND L2

INTRODUCTION

In the preceding chapters, I have delineated the distinctions between verb-framed and satellite-framed languages, as elucidated by prior research at both the verbal and gestural levels. However, there is a paucity of studies focusing on French and Dutch, and even fewer on L2 Dutch by L1 French speakers.

In this context, the present thesis seeks to elucidate the differences between Belgian French and Belgian Dutch in the multimodal expression of motion events, and to what extent CLIL French-speaking learners of Dutch transition from their L1 multimodal thinking-for-speaking pattern to that of their L2 over time. This particular group of learners was selected due to their simultaneous acquisition and learning of the target language. Specifically, this study aims to describe the expression of self-propelled motion events, intentional caused motion events, unintentional caused motion events, and location events in speech and gestures in L1 French, L1 Dutch, and L2 Dutch. It also intends to examine the progression of L2 learners over a two-year period. Additionally, it seeks to include the expression of both common motion events (e.g., walk, run, jump) and less common motion events (e.g., crawl, row, pole-vault). More specifically, the present study aims to answer the following questions:

RQ1: Which semantic components do L1 Belgian French speakers encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

RQ2: Which semantic components do L1 Belgian Dutch speakers encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

RQ3: Which semantic components do French-speaking learners of Dutch in a Content and Language Integrated Learning (CLIL) context encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

RQ4: Over a period of two years, did the L2 multimodal thinking-for-speaking patterns of French-speaking learners of Dutch in a Content and Language Integrated Learning (CLIL) context shift towards the Dutch thinking-for-speaking pattern?

Based on the thinking-for-speaking hypothesis (Slobin 1991), the Interface Hypothesis (Kita & Özyürek 2003) and previous research conducted on the multimodal expression of motion events on Romance and Germanic languages (e.g., Kellerman & van Hoof 2003; Stam 2006; Negueruela et al. 2004; Hickmann, Hendriks & Gullberg 2011), the following hypotheses are formulated:

- H1: (a) L1 French speakers will mostly focus on path in both speech and gestures;
(b) L1 French speakers' path gestures will co-occur with the verb.
- H2: (a) L1 Dutch speakers will focus more on manner and pack manner and path more tightly in speech and gestures;
(b) L1 Dutch speakers' path gestures will co-occur with the satellite.
- H3: (a) CLIL learners will keep encoding path in speech and gestures at the beginner level and partially at the intermediate level;
(b) CLIL learners' path gestures will co-occur with both the verb and satellite.
- H4: (a) CLIL learners will encode more semantic components over time;
(b) CLIL learners' gestures will be more similar to L1 Dutch speakers'.

CHAPTER 4

METHODOLOGY

4.1. Introduction

Against this background, I conducted an experiment in which L1 French speakers, L1 Dutch speakers, and CLIL French-speaking Dutch learners participated. The first five sections of this chapter present the experimental protocol, and the last three sections describe data analysis. More specifically, Section 4.2 focuses on the participants, and Section 4.4 on the elaboration of the stimuli. The task is described in detail in Section 4.5. Section 4.6 illustrates the experimental setting, followed by Section 4.7 on speech transcription conventions. The last section (4.8) of this chapter addresses the qualitative analysis of the data.

4.2. Participants

4.2.1. Introduction

As the purpose of this dissertation is to determine how CLIL French-speaking learners of Dutch express motion events, I focused on secondary school students. I opted for 4th year students and followed CLIL students up to the 6th year. In this way, I was certain that their L1 gestural development was completed. The Belgian context makes it impossible to have fully monolingual participants, as all the students have language classes at school, but I excluded students who were raised bilingually or spoke another language (than French for the L1 French speakers and CLIL students and Dutch for the L1 Dutch speakers) at home. It is important to note that the participants with low gesture rates were not excluded. Although this study focuses on the multimodal expression of motion events, I thought it would be interesting to analyze speech-only descriptions to determine whether they were more detailed than those accompanied by gestures.

This section is structured as follows: Section 4.2.2 discusses data protection and recruitment, Section 4.2.3 outlines the participants' profiles, and Section 4.3.2.4 focuses on CLIL participants' proficiency levels in Dutch.

4.2.2. Data Protection & Recruitment

As the participants were videorecorded and asked to provide personal information, a form of general data protection regulation was established and approved by both the *Comité d'éthique en Sciences humaines et sociales* of the University of Liège and the *Comité d'éthique en sciences comportementales* of the University of Lille. There were two versions of the form (see Appendices I.a.i and 0), one for the L1 participants and one for the learners as they repeated the experiments three times, and a Dutch version of the form for L1 speakers (see Appendix I.a.iii). The data could only be anonymized after the last data collection, whereas those of L1 French and L1 Dutch speakers could be anonymized after the first and only data collection. Both the students and their parents were asked to sign the consent form since the students were underage. It stipulated that the data could only be used for research and teaching purposes and that they would always be anonymized before any kind of diffusion; that is, the participants' faces would systematically be blurred, and no personal information would be divulged at any time.

We contacted the principals of each school and asked them for appointments to present the project. I met the principal of the CLIL school in January 2021 and the principal of the French-speaking school in February 2021. They were informed of the precise aim of the research (i.e., they knew I was looking at gestures, contrary to students), the tasks, and how the data would be dealt with. They were also given a letter with an explanation. (see Appendix 0) They all allowed me to collect data at their schools and look for participants. I went to different classrooms at the CLIL and French-speaking schools to present the project to students. They were told that they were invited to participate in a linguistic experiment that consisted of retelling a cartoon and describing pictures. I informed them that the entire experiment would be videorecorded, but that all data would be anonymized. All interested students were given a letter with an explanation (Appendix A.c), a letter for their parents (Appendix A.d), a questionnaire (Appendix A.e), and two copies of a consent form, and were asked to give the filled questionnaire and a signed copy of the consent form back to me. Because of the pandemic, I could not meet the principal

or students from the Flemish school in person. I had to create a video in which I presented the project, and the teacher gave all the documents mentioned above to the interested students. Only 11 students agreed to participate in the study in May 2021. Thus, I tried to recruit more students in person in May 2022 and collected the data of three students (out of ten interested students) who had brought the documents back in June 2022.

4.2.3. Profiles

Participants were asked to complete a questionnaire (see Appendix A.e) on their educational background, experience with French and Dutch, and foreign language skills. As mentioned above, the Belgian context does not make it possible to have perfect monolingual participants since all children have language classes at school. Thus, participants were asked to assess their knowledge of foreign languages. The languages included in the questionnaire were English, German, Spanish, and Italian, as they are taught in educational institutions. The participants were also provided with the opportunity to include any additional language in which they were proficient. However, they were all required to be raised monolingually.

In the following section, the profiles of L1 French-speaking participants are outlined, followed by those of L1 Dutch-speaking participants in Section 3.3.2. and those of CLIL French-speaking learners of Dutch in Section 3.3.3.

4.2.3.1. L1 French-speaking participants (FR)

The sample comprised 15 L1 French speakers (11 males and four females). Thirteen of them were 15 years old and two were 16 years old at the time of data collection. They were all in their 4th year of secondary school at a French-speaking school in the province of Liège (Belgium). None of the participants were raised bilingually or had Dutch-speaking family members (except for FR7, whose grandfather spoke Dutch, but she declared occasional exposure). They did not have any written or face-to-face interactions in Dutch, all went to a French-speaking primary school and never attended a Dutch-speaking school. Finally, their knowledge of Dutch was null (46.66%) or basic (53.33%), as eight had been studying Dutch for a maximum of two years in secondary school (3rd and/or 4th year), among whom one had also studied it in the 5th and 6th years of primary school. Table I.1 in Appendix i.a displays the responses of each participant.

They were asked to assess their knowledge of foreign languages using the following scale: no knowledge, basic knowledge, average knowledge, good knowledge, and very good knowledge (see Table I.2 in Appendix i.a). All but one of the participants had been studying English since the 5th year of primary school (2 hours per week and then 4 hours per week in secondary school). The last one began in secondary school. Concerning their own assessments, one participant acknowledged having basic knowledge, eight average knowledge, and five good knowledge¹⁵. In addition, seven of them had been learning Spanish for almost two years. Four participants acknowledged having some basic knowledge of the language, two average knowledge, and one good knowledge. In addition, two participants qualified their knowledge of Italian as basic. Finally, none of the participants reported any knowledge of German.

4.2.3.2. L1 Dutch-speaking participants (DU)

The sample consists of 14 L1 Dutch speakers (nine males and five females, see Table I.3 in Appendix i.a) who were raised monolingually. Nine of them were 15 years old, three were 16 years old, and one was 14 years old when the data were collected¹⁶. They all attended a Dutch-speaking primary school and were in their 4th year of secondary school at the time of data collection. None of them were in contact with L1 French speakers or had French-speaking family members. Two participants declared having other experiences with French: DU3 did a school program in a French-speaking school, and DU5 was in contact with French at the day care center.

In Flanders, children begin to learn French in the fifth year of primary school, which means that the participants had been learning French for an average of six years, except for one participant (DU13), who said he began learning French at the age of six. Nevertheless, he indicated that he did not have any knowledge of French (which should thus be interpreted as having little knowledge). In addition, six participants acknowledged having basic knowledge, five average knowledge, and one (DU10) good knowledge.

¹⁵ One participant did not give any information on their English knowledge.

¹⁶ One participant did not give any information.

L1 Dutch participants had also been taught English since their first year of secondary school¹⁷, which means that they had been learning English for almost four years. Three of them considered their knowledge of English to be average, seven good, and four very good (see Table I.4 in Appendix i.a). In addition to English lessons at school, Flemish people are often confronted with this language, as movies and TV shows are not dubbed but subtitled, which undoubtedly plays a role in their language proficiency. Finally, three participants (DU10, DU13, and DU14) indicated having basic knowledge of German and three (DU3, DU10, and DU11) of Spanish.

4.3.2.3. CLIL French-speaking learners of Dutch (CLIL)

The sample first consisted of 15 participants, but as three of them could not take part in the experiment in 2023, they were excluded from the sample. The 12 remaining participants (nine females and three males) were all in the 4th year of secondary school at the time of the first data collection. They were all 15 years old, except for one who had just turned 16 (see Table I.5 in Appendix i.a). Eleven of them attended French-speaking primary school, but they began to learn Dutch at different times: one participant started in the 1st year of primary school¹⁸, one in the 4th year of primary school, five in the 5th year, and four in the 1st year of secondary school. The last participant attended a CLIL primary school and began to learn Dutch in kindergarten at the age of five. In addition, two of them studied in Flanders, CLIL7 during the first two years of secondary school and CLIL1 during the first three years of secondary school. They thus had many more contacts with L1 speakers and were truly immersed. Both still had written contacts with L1 speakers in 2021 and 2023. CLIL7 also had face-to-face interactions in both years, and CLIL1 only in 2023. In addition, CLIL15 had written contacts in 2021 and CLIL6 had both written and face-to-face interactions with L1 speakers in 2023. Overall, the participants form a fairly homogeneous group as there are no major differences between them. Only CLIL1 and

¹⁷ 2 hours per week during the first two years and three hours per week in the third and fourth years.

¹⁸ Initiation to Dutch (games, songs...) until the 5th year when more formal classes began to be taught.

CLIL7 distinguish themselves as they studied in Flanders and thus have more experience with Dutch.

Regarding their self-assessed linguistic skills in 2021 (see Table I.6 in Appendix i.a), two of them acknowledged having some basic knowledge of English, eight average knowledge, one good knowledge and one very good knowledge. In addition, CLIL10 declared some basic knowledge of Spanish, and CLIL12 declared some basic knowledge of Italian. None of the participants had studied German.

In 2023, four participants acknowledged having some basic knowledge of English, four average knowledge, two good knowledge, and two very good knowledge. In addition, two of them acknowledged having some basic knowledge of Spanish, and one average knowledge. Finally, one participant declared having basic knowledge of Italian and another one average knowledge. No knowledge of German was stated.

Following the final data collection, participants were queried regarding their perceptions of the research topic. None identified motion events or gestures as the focus. Those who speculated believed the study aimed to assess the progression of their proficiency levels or evaluate CLIL teaching (see Appendix i.b). The study's purpose was subsequently disclosed to them, and they were asked if they had previously considered it. All participants responded in the negative.

4.3.2.4. CLIL French-speaking Dutch learners' proficiency levels

In order to determine their proficiency level objectively, the CLIL students were asked to take the Dutch proficiency test on the [Wallanguages](#) website (Région Wallonne 2012). This platform was created for Walloons to improve their language skills in Dutch, German, and English. Before being offered adapted courses, users can take a test to assess their level. It consists of four parts: grammar (20 questions), vocabulary (15 questions), listening comprehension (10 questions), and reading comprehension (10 questions) and lasts for about forty minutes. The system evaluates good and wrong answers and adapts the level of the questions accordingly. Most of the questions are multiple-choice ones, except for a few vocabulary and grammar questions that require filling in a blank. This proficiency test was chosen for multiple reasons. First, it covers a broad range of themes, as the platform tackles the twelve thematic fields approached in secondary school (Fédération Wallonie-

Bruxelles 2017). Second, it provides an objectified evaluation. Finally, the fact that the system adapts the degree of difficulty of the questions was a significant factor in its selection.

The CLIL participants completed the test before each data collection so that I could measure their evolution and correlate their levels with their production. Figure 4.2.1 illustrates the results the participants obtained after taking the test in 2021 and 2023.

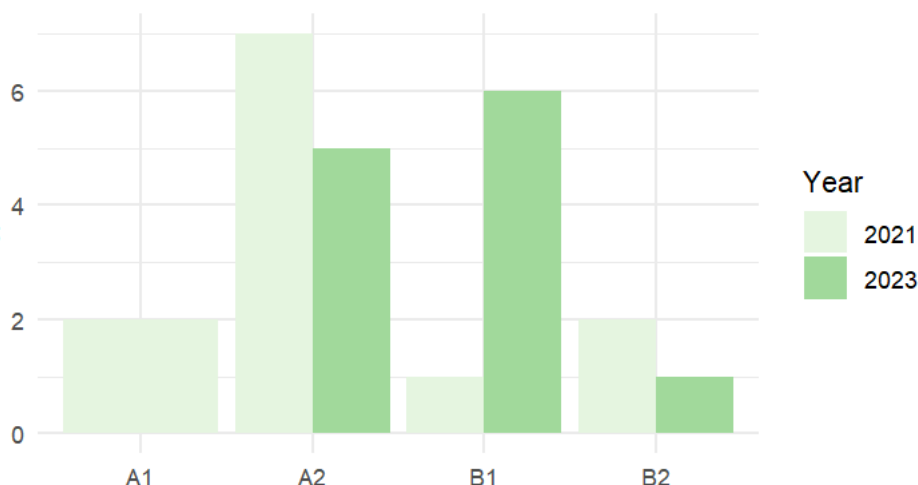


Figure 4.2.1: CLIL students' proficiency levels in Dutch in 2021 and 2023¹⁹

In 2021, two participants had an A1-level (16.67%), seven had an A2-level (58.33%), one had a B1-level (8.33%), and two had a B2-level (16.67%). Even though they were in the same year and had a similar experience with Dutch (except for CLIL1 and CLIL7, who obtained B2), the results were still somewhat disparate.

In 2023, five of the participants had an A2-level (41.68%), six had a B1-level (60%), and one had a B2-level (8.33%). The most prominent level shifted from A2 to B1 with still a considerable proportion of A2-students and no more A1-students.

Yet, the participants' individual evolutions between 2021 and 2023 are more nuanced, as shown in Table 4.2.1. Three participants obtained the same results: CLIL1 stayed B2, CLIL2 A2, and CLIL6 A2. Six of them obtained a higher level in 2023: CLIL3, CLIL5, CLIL9, CLIL10, and CLIL12 went from A2 to B1, and CLIL13 went from A1 to A2. Finally, CLIL7

¹⁹ CLILa + number will be used to refer to the participants' data from 2021 and CLILc + number will be used to refer to the participants' data from 2023.

moved from B2 to B1 and CLIL14 from B1 to A2. These participants' regressions could be accounted for by external and/or internal reasons: some students mentioned that the pandemic played a role in their learning, and/or they could have been tired or distracted during the evaluation.

	2021 (a)	2023 (c)	Evolution
CLIL1	B2	B2	0
CLIL2	A2	A2	0
CLIL3	A2	B1	+1
CLIL5	A2	B1	+1
CLIL6	A2	A2	0
CLIL7	B2	B1	-1
CLIL9	A2	B1	+1
CLIL10	A2	B1	+1
CLIL12	A2	B1	+1
CLIL13	A1	A2	+1
CLIL14	B1	A2	-1
CLIL15	A1	A2	+1

Table 4.2.1: Proficiency levels of each CLIL participant in 2021 and 2023

4.4. Elaboration of the stimuli

Several types of stimuli are typically used to elicit data in the field of motion events. Many studies have been conducted using the wordless picture book *Frog, where are you?* by Mayer (1969) (e.g., Anastasio 2018; Cadierno & Ruiz 2006; Hijazo-Gascón 2021; Kellerman & van Hoof 2003; Özçakalistan & Slobin 1999; Slobin 1996; Yoshioka & Kellerman 2006), the *Tomato man movies* by Özyürek et al. (2001) (e.g., Allen et al. 2007;

Mol & Kita 2012; Özyürek et al. 2005; Özyürek et al. 2008; Peiró Márquez & Ibarretxe-Antuñano 2021) and *Canary Row* (1950), an episode of the cartoon *Tweety & Sylvester* to study the expression of motion events (Brown 2015; Brown & Chen 2013; Brown & Gullberg 2010; Brown & Gullberg 2013; Choi & Lantolf 2008; Iwasaki & Yoshioka 2020; Kita & Özyürek 2003; Lopez-Ozieblo 2022; McNeill 1992; McNeill 2001; McNeill & Duncan 2000; Stam 2006; Stam 2008; Stam 2010; Stam 2015; Stam 2018; Stam et al. 2023; Woerfel 2018).

I opted for an elicited narrative of an animated cartoon. This type of tasks has “more ecological validity than many of the less natural language tasks” (Kellerman 2001: 171) and allows “researchers to study spontaneous lexical choices in their linguistic and visual contexts, thus ensuring the ecological validity of the investigation” with a certain measure of control considering that the same stimulus is described by the whole sample, which allows for comparisons across groups and “meaningful examination of the relationship between words and their real world referents” (Pavlenko 2011: 8). The advantage of the cartoon, in contrast to the picture book, is that motion events are presented dynamically rather than statically. In addition, I preferred a cartoon to video clips depicting motions because I wanted participants to retell a story in which motion events were present and prominent, but not the main focus of the video. Pavlenko (2011:8) considered this a weakness of the task, as some participants could not mention the targeted elements, but to us, the elicited data would be more spontaneous because participants would be less likely to guess the purpose of the experiment, which worked (at least) for the learners as explained in Section 4.3.2.3.

We sought a cartoon featuring a diverse range of motion events to investigate additional motion events while maintaining alignment with previous studies. The selection criteria included both typical and infrequent motion events to determine whether gestures varied according to the canonicity and expectedness of the event. The cartoon *Tweet Zoo* (1957) met these criteria, containing approximately 100 motion events (including location events) ranging from prototypical walking to atypical pole vaulting (see Appendix II.I for the complete list). This episode enabled me to examine various types of motion events, as it also features intentionally and unintentionally caused motion events.

The episode was retrieved from YouTube on October 28, 2020. It lasts for 296 seconds, excluding opening and closing credits. To help participants recall details, the episode was divided into 15 shorter fragments, of which two were fillers²⁰, as they were not genuinely part of the primary narrative (Sylvester pursuing Tweety in the zoo) and contained minimal motion events. Each fragment represents an entire scene and lasts for an average of 18 s (excluding the fillers, $SD = 2.83$ s). The cartoon was shown chronologically for the coherence of the story. The episode contains 100 motion events in total (see Table 4.4.1), which means an average of 7.69 motion events per fragment (excluding the fillers, $SD = 2.27$).

	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	Total
d	11s	22s	19s	20s	17s	19s	18s	21s	16s	14s	19s	19s	19s	234s
n	8	10	5	8	10	6	6	12	3	8	7	10	7	100

Table 4.4.1: Fragment duration (d) and number of motion events (n) per fragment

For the current study, 8 out of the 14 fragments were selected: fragment 4, fragment 5, fragment 9, fragments 10-11-12-13 (one sequence), and fragment 14. Fragment 4 depicts Sylvester crawling out of a cage and pacing up and down. The second sequence (fragment 5) occurs at the edge of and in the cage of tigers. The third fragment (fragment 9) happens near and in the crocodile pond. The fourth sequence depicts a scene with a lion and is further segmented into four fragments according to the location changes. In fragment 10, Sylvester is in front of the lion cage. In fragment 11, both characters are in the crocodile pond. In fragment 12, they are both in the lion's cage, and in fragment 13, they are both near the crocodile pond. Finally, the last sequence (fragment 14) illustrates the last pursuing scene in which Sylvester tries to pole vault over the crocodiles' pond to catch Tweety Bird. The descriptions of the scene with the elephant (fragments 6-7-8) fall out of the scope of the present dissertation. Upon analyzing these fragments, recurring patterns

²⁰ The first filler is the first scene of the episode. It features a zoo worker guiding a group of people through the zoo. The second one is the last scene of the episode. Sylvester crosses words out of his diet list and birds come to sit on his shoulders. The fillers last for 62 seconds excluding opening and closing credits.

were observed, indicating a degree of saturation concerning the types of gestures and the semantic components present in the speech and gestures of the learners. Consequently, it was concluded that further data analysis would not yield any further insights.

All motion events were listed, given an ID (ME + number), and coded for event type, manner of motion, path direction, and boundary crossing before conducting the experiment (see Table I.1 in Appendix I.aI). In this way, I could determine the range of motion events and use it to investigate whether and how the gesture rates of the three groups of participants vary depending on the manner of motion.

Table 4.4.2 shows the types of motion events in the eight fragments. I identified 31 self-propelled motion events, 13 intentional caused motion events, seven unintentional caused motion events, one caused location event, and eight location events (as entities can always be located, all descriptions of location events were considered even when they had not been listed before).

	n	%
Self-propelled motion events	31	51.67%
Intentional caused motion events	13	21.67%
Unintentional caused motion events	7	11.67%
Caused location events	1	1.67%
Location events	8	13.33%
Total	60	100.00%

Table 4.4.2: Motion event types in the selected fragments

Table 4.4.3 illustrates the distribution of motion events across fragments. There are between three and 12 motion events per fragment. Seven fragments feature self-propelled motion events. Five fragments contain intentional caused motion events, four unintentional caused motion events, one caused location events and at least four involve location events.

	Self-propelled		Intentionally caused		Unintentionally caused		Caused location		Location		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
F4	4	80.00%	1	20.00%		0.00%		0.00%		0.00%	5	100.00%
F5	3	37.50%	3	37.50%		0.00%		0.00%	2	25.00%	8	100.00%
F9	10	83.33%		0.00%	2	16.67%		0.00%		0.00%	12	100.00%
F10	1	33.33%	1	33.33%		0.00%		0.00%	1	33.33%	3	100.00%
F11	3	37.50%		0.00%	1	12.50%		0.00%	4	50.00%	8	100.00%
F12	7	100.00%		0.00%		0.00%		0.00%		0.00%	7	100.00%
F13		0.00%	7	70.00%	3	30.00%		0.00%		0.00%	10	100.00%
F14	3	42.86%	1	14.29%	1	14.29%	1	14.29%	1	14.29%	7	100.00%
Total	31	51.67%	13	21.67%	7	11.67%	1	1.67%	8	13.33%	60	100.00%

Table 4.4.3: Distribution of motion events across fragments

Table 4.4.4 provides an overview of the range of manners of motion. Some of them are frequent (e.g., 12 running events), whereas others occur only once (e.g., crawling and rowing events).

	n	%
Self-propelled motion events	31	50.85%
Crawling	1	1.69%
Flying	2	3.39%
Pacing	2	3.39%
Pole-vaulting	1	1.69%
Riding	1	1.69%
Rowing	1	1.69%
Running	12	20.34%
Springing	5	8.47%
Walking	6	8.47%
Intentional caused motion events	13	22.03%
Diving	1	1.69%
Dragging	2	3.39%
Kicking	1	1.69%
Lifting	2	3.39%
Pulling	1	1.69%
Riding	1	1.69%
Taking out	1	1.69%
Throwing	4	6.78%
Unintentional caused motion events	7	11.86%
Falling	4	6.78%
Sinking	1	1.69%
Sliding	2	3.39%
Caused location events	1	1.69%
Putting	1	1.69%
Location events	8	13.56%
Sitting	7	11.86%
Standing	1	1.69%
Total	60	100.00%

Table 4.4.4: Manner of motion in the eight fragments

Finally, Table 4.4.5 presents the distribution of boundary crossing events versus non-boundary crossing events. In the case of self-propelled motion events, 28.81% are

boundary crossing events (vs. 74.19% of non-boundary crossing events). Intentional caused motion events are boundary crossing in 53.85% of cases and unintentional caused motion events in 57.14% of cases. The caused location event is not boundary crossing.

	Yes		No		NA		Total	
	n	%	n	%	n	%	n	%
Self-propelled motion events	8	25.81%	23	74.19%	0	0.00%	31	100.00%
Intentionally caused motion events	7	53.85%	6	46.15%		0.00%	13	100.00%
Unintentionally caused motion events	4	57.14%	3	42.86%		0.00%	7	100.00%
Caused location events		0.00%	1	100.00%		0.00%	1	100.00%
Location events		0.00%		0.00%	8	100.00%	8	100.00%
Total	19	31.67%	33	55.00%	8	13.33%	60	100.00%

Table 4.4.5: Boundary crossing events

4.5. Task

The task took the form of a matching game. The matching game served as a mechanism to elicit detailed descriptions from participants. The describers were not exposed to the images and were unaware of the specific focus of the study.

We screenshot frozen images throughout the entire episode and used them to create the game. For each fragment, I selected three images: one corresponding to the fragment and two others that shared similarities with the first image or fragment. The similarities could be of different types: the same characters involved, similar actions with different characters, and the same scenery but with an action that happened before or after the

fragment. Figure 4.5.1 illustrates the three pictures chosen in 2021 for the third fragment. The first two pictures feature the same characters (i.e., Sylvester and the lion), and the second and last pictures feature a similar action (i.e., hitting). Distinct sets of images were created for each data collection to encourage CLIL describers to maintain detailed retellings of the fragments. All the montages can be accessed via Appendix II (Task & Transcripts).



Figure 4.5.1: Matching game 2021 - F3

4.6. Experimental setting

Before collecting the data, I conducted a pre-test on November 9, 2020 with three dyads of 15-year-old teenagers to ascertain that the stimuli would elicit motion events and gestures, that the duration of the fragments was adequate to recall details, and that the matching game was doable. The pre-test was helpful to find the right settings of the camera and the results were conclusive.

As the first data collection took place during the pandemic, I had to respect some protective measures such as distance. The participants sat in front of each other and were separated by Plexiglas. Only the describers removed their mask. The camera was placed next to the matcher and was focused on the describer. I ensured that the angle was sufficiently large to capture the describer even if their gestures were produced with extended arms. The fragments were displayed on a computer. The computer was placed on a table next to the describer, where the matcher could not see it. In 2023, I could collect data without any COVID restrictions, but I aimed to maintain a similar setting.



Figure 4.6.1: Experimental setting in the French-speaking school in 2021



Figure 4.6.2: Experimental setting in the CLIL school in 2023

The participants carried out the task in dyads, which means that the describer and matcher always knew each other. The experiment lasted on average 16 minutes 36 seconds per dyad in L1 French ($SD=3.1$), 16 minutes and 41 seconds in L1 Dutch ($SD=2.3$), 22 minutes 38 seconds in the L2 condition in 2021 ($SD=3.98$) and 25 minutes in 2023 ($SD=6.63$). Instructions were always provided in the participants' mother tongue to ensure comprehension. They were told that the describer would watch a series of fragments of an episode of the cartoon *Tweety & Sylvester* one by one, and that after each fragment, they would retell what they had just seen with as many details as possible to the

matcher, and that, consequently, the matcher would have to pick the picture that corresponded to the fragment among three pictures. They were also informed that they were allowed to interact until the matcher saw the pictures. The purpose of the experiment and the interest in gestures were never mentioned. After the last data collection, the CLIL participants were asked to write down what they thought the purpose of the experiment was. None of the participants identified the correct aim. Most of them thought that I wanted to evaluate CLIL teaching or their Dutch level. None of the participants mentioned the terms “motion events” or “gestures”.

4.7. Speech transcription

The speech was transcribed using McNeill’s (1992:95) conventions. Self-interruptions, repetitions, and repairs were indicated with an asterisk; nonspeech sounds, such as swallows and laughs with a percentage symbol, filled pauses and lengthening with angle brackets, unfilled pauses with slashes, and breath pauses with hashes. Table 4.7.1 summarizes these conventions.

*	Self-interruption, repetition, repair
%	Nonspeech sound: swallow, laugh
<>	Filled pause and lengthening
/	Unfilled pause
#	Breath pause

Table 4.7.1: Speech transcription conventions (McNeill 1992: 95)

4.8. Coding

This section is devoted to the qualitative analysis of the data conducted using ELAN (Max Planck Institute for Psycholinguistics: The Language Archive 2024). It is further organized into two primary sections: speech (Section 4.8.1) and gesture (Section 4.8.2), followed by subsections that address each of my parameters.

4.8.1. Speech

Initially, participants' speeches were segmented into individual utterances²¹, each containing a single motion event. Following Berman et al. (199) and Stam (2008), I did not analyze aspectual and modal verbs. In other words, constructions such as “hij wil polsstokspringen” [he wants to pole-vault] were considered as one clause. Prior to commencing the analysis, I identified whether the description of the motion event was articulated for the first time (first narration) or not. In cases where it was not the first narration, I further distinguished between clarifying utterances (clarification), where participants reiterated the description upon the request of the matchers, and repetitions, where participants rephrased or restated the description of a motion event without any external prompting. Subsequently, each motion event was tagged according to a pre-established list (see Appendix I.a), and I identified the type of event (self-propelled motion, intentional caused motion, unintentional caused motion, caused location, or location). The speech analysis then involved determining the semantic components of the verbs and satellites and examining their combinations. This section is divided into four parts: Section 4.8.1.1 addresses verbs, Section 4.8.1.2 focuses on satellites and grounds, Section 4.8.1.3 examines boundary crossing, and Section 4.8.1.4 explores the combination of the semantic components.

4.8.1.1. Verbs

While numerous studies have examined the expression of motion events, particularly those that are self-propelled, there is a paucity of detailed classifications of the verbs analyzed, and the categorization of certain verbs remains debated. In this section, I

²¹ An utterance is the equivalent of a clause in the present work.

present an overview of my classification of verbs used to describe self-propelled motion events, intentional and unintentional caused motion events, caused location events, and location events.

Self-propelled motion events

My classification methodology integrates existing taxonomies (Kopecka 2006; Lewandowski 2021; Özçakalistan & Slobin 1999; Aurnague 2008; Van Staden, Bowerman & Verhelst 2006), the DinaVmouv database (Stosic, Minoccheri & Aurnague 2023), and definitions from De Grote Van Dale (online) and Le Robert (online).

Verbs such as "ressortir" [to exit again] in (43) and "komen" [to come] in (44) describe trajectory and thus convey path. In "poursuivre" [to pursue] (45) and "afkomen" [to come at] (46), path is expressed in both the verb roots and prefixes. Conversely, the verbs "voler" [to fly] and "lopen" [to walk] express manner, as illustrated in examples (47) and (48). Additionally, both manner and path are encoded in certain verbs or verbal constructions, such as "faire les cent pas" and "ijsberen" [to pace up and down], respectively, in (49) and (50). Finally, manner can be encoded in the verb root and path in a prefix, as exemplified by the verbs "poursuivre" [to chase after] in (51) and "overvliegen" [to fly over] in (52).

(43) Il *ressort* de l'étang (FR3, ME75)²²

[He exits the pond again]

(44) De kat <> *komt* in een alligatorkooi (DU8, ME72)

[The cat <> comes into an alligator cage]

(45) Grosminet du coup il le *poursuit* par en bas (FR5, ME69)

[Sylvester then pursues him from below]

(46) Dan ziet ie in één keer de kat op Tweety *afkomen* (DU10, ME65)

[Then he suddenly sees the cat coming at Tweety]

(47) Il a continué à *voler* jusqu'au-dessus de l'arbre" (FR4, ME71)

²² FR/DU/CLILa/CLILc + numbers are the participants' ID while ME + number refers to the motion events described

[He kept flying until he was above the tree]

(48) Dus die *loopt* in het water he (DU2, ME72)

[So he walks into the water]

(49) Il *fait les cent pas* (FR2, ME26)

[He paces up and down]

(50) Dan gaat de kat hele de tijd *ijsberen* langs de kooi langs (DU11, ME26)

[Then the cat will pace back and forth along the cage the whole time]

(51) Titi il se fait *pourchasser* par le chat, par Grosminet et <> sur <>/une *un genre de muret (FR7, ME65)

[Titi is being chased by the cat, by Sylvester, and <> on <>/a kind of low wall]

(52) En <> die vogel *vliegt* er dus zo *over* (DU3, ME71)

[And <> so the bird just flies right over it]

Table 4.8.1 presents an overview of the semantic components encoded within the verbs and the complete lists of verbs can be found in Appendix III.

	FRENCH	DUTCH
PATHV	Entrer [enter], partir [leave], arriver [arrive], aller [go]	Volgen [follow], gaan [go], komen [come]
PATHV (PREFIX)	<u>Poursuivre</u> [pursue], s'en aller [leave]	<u>Teruggaan</u> [come back], <u>afkomen</u> [come at], <u>achtervolgen</u> [follow after], <u>weggaan</u> [go away]
MANNERV	Marcher [walk], courir [run], voler [fly], pagayer [paddle]	Lopen [walk], vliegen [fly], varen [sail], springen [jump]
MANNERPATHV	S'échapper [to escape], faire les cents pas [to pace up and down]	Ijsberen [pace up and down], duiken [dive], ontsnappen [escape]
MANNERPATHV (PREFIX)	<u>Pourchasser</u> [chase], s' <u>enfuir</u> [to flee], s' <u>envoler</u> [fly away]	<u>Wegspringen</u> [spring away], <u>voorbijlopen</u> [walk by], <u>rondwandelen</u> [walk around], <u>wegrennen</u> [to run away], <u>wegvliegen</u> [fly away]

Table 4.8.1: Semantic components in verbs (SPME)

Intentional caused motion events

We sought to identify the manner, path, and cause components inherent in verbs that denote intentional caused motion events.

Verbs such as "amener" and "brengen" [to bring], as seen in (53) and (54), respectively, convey path and cause. In contrast, verbs such as "jeter" and "gooien" [to throw], as

illustrated in (55) and (56), primarily express manner and cause. Additionally, certain verbs conflate cause, manner, and path. For instance, "pousser" and "duwen" [to push], as referenced in (57) and (58), embody the concept of applying force to propel an entity forward. For the sake of consistency, I opted to categorize the deictic component of "tirer/trekken" [to pull] and "pousser/duwen" as a path component, given my decision to include the verbs "aller/gaan" [to go] and "venir/komen" [to come] within the path category of self-propelled motion events. Lastly, certain Dutch complex verbs express path through a prefix, while manner and cause are conveyed in the verb root, as exemplified by "wegrollen" [to roll away] in (59) and path through both the prefix and verb root as in *uithalen* [take out] in (60).

(53) Puis il l'*amène* au-dessus du lac (FR4, ME95)

[Then he brings it above the lake]

(54) Eén mens *brengt* het bak met het eten voor de dieren (CLIL10a, ME33)

[One person brings the container with the food for the animals]

(55) Puis <> le lion genre le *jette* en l'air (FR3, ME99)

[Then <> the lion, like, throws him into the air]

(56) Dan *gooit* die dat vlees naar de tijgers (DU2, ME36)

[Then <> the lion, like, throws him into the air]

(57) Et donc on voit le gardien du zoo-là qui présentait avant l'homme qui était en bleu qui *pousse* le chariot jusqu'à l'enclos des tigres du Bengal (FR3, ME33 & ME34)

[And so we see the zookeeper who was presenting earlier the man in blue who is pushing the cart up to the Bengal tiger enclosure.]

(58) [...] *duwt* die koets verder (DU10, ME33)

[...] pushes the carriage further]

(59) Dan *rolde* die daarmee zo *weg* (DU3, ME37)

[Then he rolled away with it]

(60) *haalt* die leeuw die daar *uit* (DU11, ME98)

[takes the lion out of there]

The verbs used to describe intentional caused motion events are set out in Table 4.8.2.

	FRENCH	DUTCH
PATHCAUSEV	Renvoyer [send back], amener [bring]	Brengen [bring]
PATHCAUSEV (PREFIX)		Uithalen [take out], terugbrengen [bring back], wegbrengen [bring away]
MANNERCAUSEV	Conduire [ride], jeter [throw], shoter [kick], faire trainer [drag]	Gooien [throw], werpen [throw], stampen [kick], slepen [drag]
MANNERPATHCAUSEV	Plonger [plunge], éjecter [eject], tirer [pull]	Duwen [push], trekken [pull],
MANNERPATHCAUSEV (PREFIX)		<u>In</u> gooien [throw in], <u>weg</u> sjoten [kick away], <u>terug</u> gooien [throw again], <u>weg</u> trappen [kick away], <u>mee</u> sleuren [drag along]

Table 4.8.2: Semantic components in verbs (ICME)

Unintentional caused motion events

The objective was to identify the semantic components of verbs used to describe unintentional caused motion events (i.e. events in which the figure moves due to an external force, such as gravity, without any volitional aspect). Four categories of verbs were identified: those expressing path and cause, manner and cause, path, manner and cause, and those with manner and cause in the root combined with path in a prefix.

The classification of the verb "tomber" [to fall] has been a subject of considerable debate. According to Stosic, Minoccheri & Aurnague (2023), "tomber" is regarded as a change of disposition. In contrast, Anastasio (2018: 126) classifies it as a path verb. Furthermore, Stringer (2012: 259), Pourcel & Kopecka (2005: 151), Woerfel (2018: 66), and Hijazo-Gascón (2021: 284) consider it a verb expressing both path and manner. Meanwhile, Slobin et al. (2014: 719) categorize "fall" as a manner verb. Additionally, Hickmann & Hendriks (2010: 205) define "tomber" as an involuntary motion, described as "motion that was not voluntarily carried out by an agent and did not imply any explicit cause." In this study, the definitions that most closely align with the falling events from the stimuli (as illustrated in (61) and (62)) are "être entraîné vers le sol, d'un lieu élevé à un lieu bas ou profond, quand ce qui retenait ou soutenait vient à manquer" for "tomber"²³ (Le Robert, online) and "uit een hoger gelegen punt, door de werking van de zwaartekracht, in verticale, of nagenoeg verticale richting vrij naar beneden komen"²⁴ for "vallen" (De Grote Van Dale, online). Consequently, I have coded "tomber" and "vallen" as verbs expressing path and cause.

(61) Mais du coup il est *tombé* dans le lac (FR4, ME73)

[But as a result he fell into the lake]

(62) Die *valt* in het water (DU11, ME73)

[He falls into the water]

²³ [to be taken toward the ground, from a high place to a low or deep place, when that which was holding or supporting is no longer present]

²⁴ [to come down freely from a higher point, due to the force of gravity, in a vertical or nearly vertical direction]

Furthermore, I identified verbs that convey cause and manner, as exemplified in (63). The verbs “glisser” and “glijden” [to slide] can describe both voluntary and involuntary motion events²⁵. In the current study, it was used to depict involuntary motion.

(63) et en fait il *glisse* dedans (FR5, ME102)

[and actually he slides into it]

(64) dus die stok komt op die schil terecht waardoor die gewoon *glijdt* (DU2, ME109 & ME110)

[so the stick lands on the peel causing it to just slide]

Some verbs convey manner, cause, and path either solely through the verb root, as exemplified by the verbs “couler” [to sink] in (65) and “zinken” [to sink] in (66), or through both the verb root and prefix, as demonstrated by the verb “wegdrijven” [to drift away] in (67). Finally, path is encoded in both the prefix and the root of some verbs as *s'enfoncer* [to go into the depths] and *inzakken* [to cave in] in examples (68) and (69).

(65) Le bateau il *coule* (FR2, ME86)

[The boat sinks]

(66) En *zinkt* die boot met die leeuw daarin (DU1, ME86)

[And then the boat with the lion in it sinks]

(67) En *drijven* ze die zeg maar de kat terug weg (DU11, ME74)

[And then, so to speak, they drift the cat away again.]

(68) il commence à *s'enfoncer* un peu (FR9, ME73)

[he's starting to go a bit into the depths]

(69) en daar is hij *ingezakt* (DU12, M103)

[and he went under]

²⁵ Se déplacer d'un mouvement continu, volontaire ou non, sur une surface lisse ou le long d'un autre corps, les deux surfaces restant en contact permanent. [To move in a continuous motion, whether voluntary or not, across a smooth surface or along another body, with both surfaces remaining in constant contact.] (Le Robert, online)

The verbs used to express unintentional caused motion events are summarized in Table 4.8.3.

	FRENCH	DUTCH
PATHCAUSEV	Tomber [fall]	Vallen [fall]
PATHCAUSEV (PREFIX)	S'enfoncer [go into the depths]	Inzakken [cave in]
MANNERCAUSEV	Glisser [slide]	Glijden [slide]
MANNERPATHCAUSEV	Couler [sink]	Zinken [sink]
MANNERPATHCAUSEV (PREFIX)		<u>Weg</u> drijven [drift away], uitglijden [slide from its place]

Table 4.8.3: Semantic components in verbs (UCME)

Caused location events

For the sake of comprehensiveness, the coding of caused location events is included here, despite the low frequency of occurrences. The verbs used to describe caused location events can be neutral as *mettre* in (70) or can express manner and cause as *pendre* in (71) and *steken* in (72).

(70) <> Il le *met* dans l'eau des alligators en le tenant par la queue (FR1, ME97)

[<> He puts it in the alligator water by holding it by the tail]

(71) et il le *pend* au-dessus de l'étang (FR2, ME96)

[and he hangs it above the pond]

(72) en dan *steekt* die dus die kat ondersteboven in het water (DU2, ME97)

[and then it puts the cat upside down in the water]

The verbs used to recount caused location events are presented in Table 4.8.4.

	FRENCH	DUTCH
NEUTRALV	Mettre [put], poser [put]	
MANNERCAUSEV	Pendre [hang]	Zetten [put], leggen [put], steken [put], stoppen [put]

Table 4.8.4: Semantic components in verbs (CLE)

Location events

Finally, the descriptions of the stimuli also included the utterance of location events, many of which were not listed beforehand. To locate entities, neutral verbs such as “être” and “zijn” [to be] were used as demonstrated in (73) and (74). Additionally, the posture verbs “staan”, “zitten”, and “liggen”, which convey both location and manner, were also used to situate entities as exemplified in (75). Lastly, (76) illustrates an example of a French utterance featuring a verbal construction expressing both manner and location.

(73) Donc <> on voit Titi qui *est* sur un muret (FR9, Extra)

[So <> we see Titi who is on a low wall]

(74) dus Tweety en die kat *zijn* op de muurtje (DU1, Extra)

[so Tweety and the cat are on the little wall]

(75) <> de vogel *zit* nog altijd in die boom van boven (DU4, Extra)

[<> the bird is still sitting in that tree up above]

(76) il est sur une branche *assis* (FR7, ME107)

[he is on a branch sitting]

Table 4.8.5 summarizes the verbs and verbal constructions used in the descriptions of location events.

	FRENCH	DUTCH
NEUTRALV	Être, il y a	Zijn
MANNERV	Être assis, se tenir	Zitten, staan, liggen

Table 4.8.5: Semantic components in verbs (LE)

4.8.1.2. Satellites & Grounds

All the elements describing the location, goal or source of dynamic motion events – as *in het water* [into the water] in (62) - were coded as path satellites.

As far as location and caused location events are concerned, satellites and grounds describing where the entities are located such as *sur un muret* [on a low wall] in (73) were coded as location satellites.

In addition, adverbs (e.g. *vite, snel* [quick]) and clauses giving information on manner as *en le tenant par la queue* [holding him by the tail] in (70) were coded as manner satellites.

4.8.1.3. Boundary crossing

We assessed whether the motion events involved crossing a boundary, specifically determining whether the figure or entity traversed a physical boundary. Boundary crossing events include Examples (43), (44), (48), (61), (62), (63), (65), and (66). For instance, in (43), the figure (Sylvester) is initially in the pond and subsequently exits it. Conversely, non-boundary-crossing events include Examples (45), (46), (47), (49), (50), (51), (52), (53), (54), (55), (56), (57), (58), and (59). For example, in (52), Tweety flies over the pond without crossing any physical boundaries.

4.8.1.4. Constructions & Overall pictures

These parameters served to indicate the specific construction used (e.g., MannerV + PathS as in (47) and (48)) and to summarize the semantic components of the utterance (e.g., MannerPathSp, with *Sp* standing for Speech).

4.8.2. Gesture

The second level of analysis examines the gestural behavior of the participants. Initially, each gesture was delineated using the frame-by-frame method (Kita, Van Gijn & Van Der Hulst 1998). Subsequently, I delineated the stroke of non-referential gestures and all phases of referential gestures in accordance with the criteria established by Kita, Van Gijn & Van Der Hulst (1998: 31). I differentiated between the resting position, preparation, pre-stroke hold, stroke, post-stroke hold, and retraction. The analysis focused on stroke for a more in-depth examination. This involved determining (1) the type of gesture (Section 4.8.2.1), (2) the semantic components conveyed by the gesture (Section 4.8.2.2), (3) the viewpoint of the gesture (Section 4.8.2.3), (4) whether the path gestures were boundary-crossing (Section 4.8.2.4), (5) the type of event depicted by the gesture (Section 4.8.2.5), and (6) whether the gesture was novel or repeated (Section 4.8.2.6).

4.8.2.1. Gesture types

Gestures were classified as iconic, deictic, beat or pragmatic (McNeill 1992; McNeill 2006; Kendon 2004; Kendon 2017) and only the primary dimension was taken into account.

Iconic gestures depict concrete entities or actions (McNeill 1992). They can take up different forms: tracing gestures as in Figure 4.2.1 and Figure 4.8.5 where the participants trace paths, representing gestures as in Figure 4.8.8 where the participant's fingers represent the character's paws, enacting gestures as in Figure 4.8.6 where the participant acts as if she were the character and molding gestures as in Figure 4.8.7, where the participant molds the wall (Müller 2014).

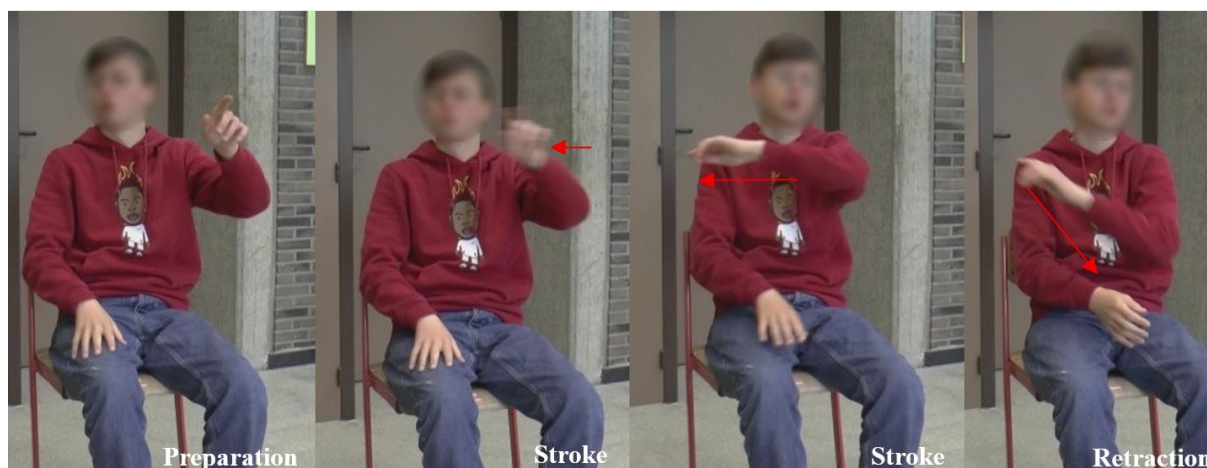


Figure 4.8.1: Iconic gesture - Path gesture co-occurring with "*en loopt de kat snel weg*" (DU10, ME75) [and the cat quickly runs away]

Deictic gestures are pointing gestures that locate entities in space. Figure 4.8.2 illustrates a typical deictic gesture (as defined by McNeill (2006)) where the index is extended.



Figure 4.8.2: Deictic gesture – Location gesture co-occurring with "*Grosminet heeft niet gezien dat hij in water is nu*" (CLIL12a, ME72) [Sylvester has not seen that he is in the water now]

Kendon (2017: 167–168) distinguished between referential gestures, which contribute to the propositional content of the utterance, and non-referential gestures. Within the latter category, we find pragmatic gestures (see Figure 4.8.3) which can have five functions. Operational gestures can confirm, deny or negate the utterance. Modal gestures provide an interpretative frame for the utterance, enabling the listener to discern whether the speaker is quoting, hypothesizing, joking etc. Performative gestures convey the illocutionary force of an utterance. Punctuational gestures allow speakers to emphasize or contrast their statements. Lastly, interactional gestures encompass “manual actions in

waving, greeting, inviting someone to do something, offering, withdrawing, beckoning or halting, requesting or inviting turns at speaking, and so on" (Kendon 2017: 168). Additionally, word-searching gestures were coded as pragmatic as they indicate the speaker's uncertainty. This gesture type includes cyclic gestures and repeated iconic gestures during a(n) (un)filled pause. In Figure 4.8.3, the speaker intended to refer to a zoo worker but was unable to recall the term in Dutch. Consequently, she used the generic word "*een mens*" [a person] and used a pragmatic gesture with a modal function to indicate her lack of knowledge of the precise term.



Figure 4.8.3: Pragmatic gesture co-occurring with "*dus een <> / *een mens /% *een mens neemt de *de *de fiets*" (CLIL13c, ME33) [*so a <> / *a person /% *a person takes the *the *the bike*]

Lastly, the second category of non-referential gestures is known as beats which are "mere flicks of the hand(s) up and down or back and forth, zeroing in rhythmically on the prosodic peaks of speech" (McNeill 2006: 60). Figure 4.8.4 features a beat gesture that co-occurs with "*alliga*".



Figure 4.8.4: Beat co-occurring with “Dus <> Titi is <> op <> het hoogtepunt van een boom *van de boom in het centrum van de water van de **alligatoren**” (CLIL2c, F14, Extra) [Dus <> Titi is <> at <> the top of a tree *of the tree in the center of the water of the alligators]

4.8.2.2. Semantic components

Referential gestures that depict motion events can convey a series of semantic components. This section provides an overview of the various semantic components encoded in the gestures observed in the data.

Figure 4.8.5 illustrates a **path** gesture, wherein the participant traces the trajectory followed by the character in the cartoon. In addition to tracing gestures with one or several fingers, participants also used their hands to represent the characters, moving them linearly to depict their trajectory. Furthermore, path-only gestures also manifested as deictic gestures, pointing to the source or the goal of the motion event.

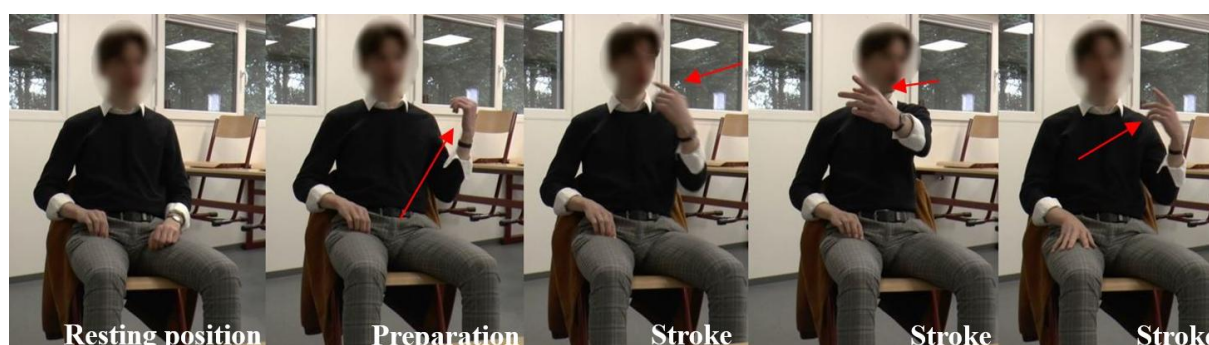


Figure 4.8.5: Iconic gesture - Path gesture co-occurring with “Il fait **des aller-retours** en faisant *en réfléchissant” (FR5, ME26) [He is going back and forth doing *thinking]

Manner-only gestures can manifest as enactments, wherein participants use their arms, hands, or feet to demonstrate the manner in which a motion is executed. In Figure 4.8.6, the participant is performing a manner-only gesture, enacting the action of walking.



Figure 4.8.6: Iconic gesture - Manner gesture co-occurring with “*hij gaat verder in het water*” (CLIL7a, ME72) [he goes further in the water]

Gestures were also used to depict **grounds**. Grounds could be drawn in the air and/or molded as in Figure 4.8.7 where the participant molds the low wall with a specific handshape and traces it.



Figure 4.8.7: Iconic gesture - Ground gesture co-occurring with “*Titi il se fait pourchasser par le chat par Grosminet et <> sur <>/une *un genre de muret*” (FR7, ME65) [Titi is chased after by the cat by Sylvester and <> on <>/a *a kind of low wall]

Furthermore, **manner and path** can be integrated into a single gesture. For example, in Figure 4.8.8, the participant's fingers symbolize the character's paw, and she oscillates her fingers to represent the action of walking while simultaneously moving sideways to

illustrate the trajectory. Such gestures, which depict non-linear movement through the repeated motion of fingers or hands, encapsulate both **manner and path**.

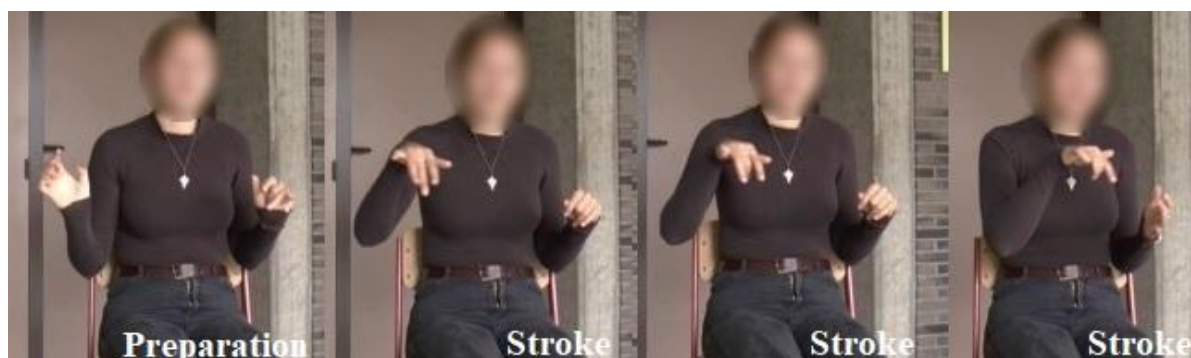


Figure 4.8.8: Iconic gesture - MannerPath gesture co-occurring with “*en dan lopen die heel die muur af*” (DU11, ME65) [and then they walk all the way down the wall]

In the description of intentional caused motion events, elements such as **path, manner, and cause** can be encapsulated within a single gesture, as demonstrated in Figure 4.8.9. The participant illustrates the action of throwing by adopting a specific handshape that represents the zoo worker holding pieces of meat, and she executes an arc-shaped trajectory to convey the motion of transferring the meat from the cart into the tigers’ cage.



Figure 4.8.9: Iconic gesture - MannerPathCause gesture co-occurring with *en dus <> een meneer <> / jette de vlees aan de tigres* (CLIL14c, ME36) [and so <> a man <> / jette the meat to the tigers²⁶]

²⁶ When L2 participants used French words in their Dutch descriptions, the English translation features the French words.

Such events were also accompanied by **manner-cause** gestures, as illustrated in Figure 4.8.10. In this instance, the participant uses a specific handshape to convey the manner in which the zoo worker operated the cart, without depicting its trajectory.



Figure 4.8.10: Iconic gesture – MannerCause gesture co-occurring with “*dus de beschermer van de <> / *van de zoo neemt het chariot*” (CLIL9c, ME33) [so the protector of the <> / *of the zoo takes the chariot]

In addition to the integration of manner, path, and cause within a single gesture, I also observed the conflation of **ground with location** (Figure 4.8.11) or **path** (Figure 4.8.12). In Figure 4.8.11, the participant uses her right arm to represent the boat (i.e., the ground), while simultaneously using her left arm to indicate Sylvester's position on the boat.



Figure 4.8.11: Iconic gesture - LocationGround gesture co-occurring with “*de leeuw staat hier*” (CLIL1c, ME83b) [the lion is standing here]

Figure 4.8.12 illustrates a gesture that represents both **path and ground**. This gesture is preceded by two others that establish the location of both characters (cf. previous gesture's stroke). In the preceding utterance, she stated that Tweety is walking on a wall. The speaker then adds, “and so Sylvester too next to <> *after *next to *after Tweety”. In total, four referential gestures are produced during this description. In the third one, which coincides with the term “naast,” each hand symbolizes a character: one hand

represents the ground (Tweety), while the other represents the Figure. This gesture thus illustrates the path of the figure in relation to the moving ground.



Figure 4.8.12: Iconic gesture – PathGround gesture co-occurring with "en dus Grosminet ook *naast* <> *na *naast *na Titi" [and so Sylvester too next to <> *after *next to *after Tweety] (CLIL14c, ME65)

Lastly, location can be expressed by deictic gestures as in Figure 4.8.2 or by representing iconic gestures as can be seen on the first picture of Figure 4.8.13 where the participant's hands represent the characters and locate them in space.

4.8.2.3. Viewpoint

The perspective of each referential gesture was systematically coded. Gestures may be articulated from either the observer's viewpoint or the character's viewpoint (McNeill 1992; Parrill 2010; Parrill 2011). The character viewpoint is exemplified in Figure 4.8.6, Figure 4.8.9, and Figure 4.8.10. In these instances, participants assume the roles of the cartoon characters. In contrast, in Figure 4.8.1, Figure 4.8.2, Figure 4.8.5, Figure 4.8.7, Figure 4.8.8, and Figure 4.8.11, the participants recount the narrative as external observers.

4.8.2.4. Boundary crossing

Path gestures can be categorized as either boundary-crossing (Figure 4.8.13) or non-boundary-crossing (Figure 4.8.1, Figure 4.8.5, and Figure 4.8.8). A gesture is considered boundary-crossing when a brief pause occurs at the moment of crossing the boundary. In

the figure below, the participant initially traces the horizontal movement of Sylvester, pauses, and then traces the downward movement of the cat as it falls into the hole.

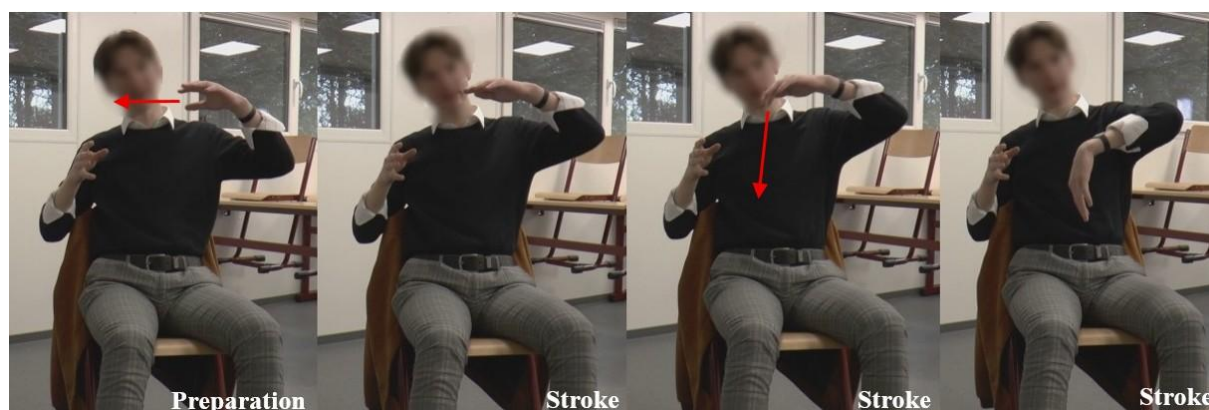


Figure 4.8.13: Boundary crossing path-gesture co-occurring with "*et en fait il glisse dedans*" [and in fact he slides into it] (FR5, ME102)

4.8.2.5. Type of event

In instances where there was a discrepancy between the type of event articulated in speech and that depicted through gestures, I systematically coded the type of event represented by the gesture. For example, some participants verbally described the zoo worker as feeding (or giving food to) the tigers while simultaneously producing a throwing gesture similar to the one in Figure 4.8.9. In such cases, although the speech did not independently convey any motion events, the gesture did. Consequently, the utterance was still considered in the analysis.

4.8.2.6. First gesture vs. clarification

Similarly to the coding of first narration vs. clarification, I indicated whether the gesture was performed for the first time or repeated. In cases where it was not the first execution, I further distinguished between clarifying gestures (clarification), where participants reiterated a gesture after the matcher asked a clarification question, and repetitions, where participants reproduced the gesture without any external prompting

4.8.3. Speech and co-speech gesture

The final part of the analysis consisted of looking at speech and gestures together first by looking at how they co-occur (Section 4.8.3.1) and second by looking at how they are combined (Section 4.8.3.2). Lastly, Section 4.8.3.3 explains how gestures were counted.

4.8.3.1. Synchronization

To determine the synchronization between speech units and the stroke of referential gestures, I followed Stam's (2008) categories, adapting them to meet the specific requirements of this study on French and Dutch. As Dutch is an SOV language, I decided to split the category encompassing 'more than one element' into several more specific categories such as 'Verb + satellite + ground'. I still decided to keep the 'more than one element' category to indicate if other speech units were uttered during the production of the gesture. Table 4.8.6 presents an overview of the categories used, along with illustrative examples. The terms highlighted in bold within the figure legends are those that co-occurred with the depicted gesture.

Verb = V, SV, VO	en loopt de kat snel weg (DU10, ME75, cf. Figure 4.8.1)
Satellite: adverbs, propositions of path	en dus Grosminet ook naast <> *na *naast *na Titi (CLIL14c, ME65, cf. Figure 4.8.12)
Ground noun phrase	Titi il se fait pourchasser par le chat par Grosminet et <> sur <>/une *un genre de muret (FR7, ME65, cf. Figure 4.8.7)
Verb + satellite	hij gaat verder in het water (CLIL7a, cf. Figure 4.8.6)
Satellite + ground noun phrase	<> ging weg van de *van de plaats van de beer (CLIL7a, ME23, GroundG) [and went away from the *from the place of the bear]
Verb + satellite + ground noun phrase	hij loopt erin als een kooi (CLIL1c, ME89, MannerG) [he walks into it like a cage]
Verb (prefix) & Prefix	dus hij ga weg dan (CLIL1c, ME85, PathG) [so he goes away then]

Prefix	en die kat zit dus<>*voor het hok van een leeuw zit ie zo rond te wandelen (DU2, ME77, PathG) [and so the cat is like walking around <>*in front of the lion's cage]
Figure	de leeuw staat hier (CLIL1c, ME83b, cf. Figure 4.8.11)
Object	en <> hij neem <> een boot (CLIL15c, ME79, MannerCauseG) [and <> he take <> a boat]
(Un)filled pause	en <> de leeuw / in Grosminet %% (CLIL3c, ME100, MannerG) [and <> the lion / in Sylvester]
Others	Grosminet heeft niet gezien dat hij in water is nu (CLIL12a, ME72, cf. Figure 4.8.2)

Table 4.8.6: Synchronization between speech and gesture: speech categories based on Stam (2008: 238)

In addition, I followed her guidelines as to when gestures do not fall on complete words: “if the gesture fell on a syllable of the word, it was counted as co-occurring with the full speech element, for example, *co* from *come* was counted as a verb; (2) if it was a case of co-articulation, for example *s in* from *gets in* [e.g., *gaat in*], it was counted as a satellite; (3) and if the gesture fell on a preposition and an article, for example *to the* [e.g., *naar de*], it was counted as a satellite” (Stam 2008: 239–240) and I adapted them to French and Dutch.

4.8.3.2. Multimodal constructions & Overall multimodal pictures

These parameters served to indicate the specific multimodal construction used (e.g., MannerPathV (prefix) + MannerS + PathG in the case of Figure 4.8.1) and to summarize the semantic components of the utterance and gesture (e.g., MannerPathSp + PathG, with *Sp* standing for Speech and *G* for gesture).

4.8.3.3. Number of referential and non-referential gestures

Lastly, I counted the number of referential (excluding the gestures that do not depict motion events) and non-referential gestures of each utterance.

CHAPTER 5

MOTION EVENTS IN SPEECH

5.1. Introduction

This chapter describes how self-propelled motion events, intentional caused motion events, unintentional caused motion events, caused location events and location events are described in speech in L1 French, L1 Dutch and L2 Dutch. In addition, it compares the descriptions of motion event in speech when they are accompanied by gestures with when they are not. Section 5.2 first sketches the general tendencies whereas the next sessions focus each on a different type of motion events: Section 5.3 on self-propelled motion events, Section 5.4 on intentional caused motion events, Section 5.5 on unintentional caused motion events, Section 5.6 on caused location events and Section 5.6.5 on location events. Finally, Section 5.8 provides some concluding remarks.

5.2. General tendencies

This section provides a broad overview of the speech data. Section 5.2.1 summarizes the number of utterances per group. Section 5.2.2 describes the types of events captured and Section 5.2.3 examines the number of (referential) gestures per description to provide insight into which parts of the data include gestural activity as a preparation for the deeper analyses conducted in Sections 5.3, 5.4, 5.5, 5.6, and 5.6.5.

5.2.1. Number of utterances

Figure 5.2.1 presents the number of utterances found in the data. In total, 2,374 utterances were analyzed: 793 in French, 419 in DU2a (L2 Dutch in 2021), 515 in DU2c (L2 Dutch in 2023) and 647 in L1 Dutch²⁷.



Figure 5.2.1: Number of utterances per group

As the number of participants per group differs (15 FR, 12 CLILa, 12 CLILc, and 14 DU), the average distribution of utterances across the different groups was calculated and is illustrated in Figure 5.2.2. In French, participants produced a mean of 52.9 utterances²⁸ (SD = 17.1, Mdn=50, Q1 = 43.5, Q3 = 59.5, IQR = 16), a minimum of 31 and a maximum of 96 utterances. In contrast, CLIL learners produced a mean of 34.9 utterances (SD = 11.5, Mdn=30.5 utterances, Q1 = 27.2, Q3 = 43.5, IQR = 16.2), a minimum of 23 and a maximum of 61 utterances in 2021 (DU2a). In 2023 (DU2c), they produced a mean of 43 utterances (SD = 12, Mdn=43.5 utterances, Q1 = 37.2, Q3 = 47.5, IQR = 10.2), a minimum of 17 and a maximum of 61 utterances. Finally, L1 Dutch participants produced a mean of 46.2 utterances (SD = 13.5, Mdn= 47 utterances, Q1 = 34.2, Q3 = 54, IQR = 19.8), a minimum of 29 utterances and a maximum of 73.

²⁷ As the dataset contains 93.30% of first narrations, 4.76% of repetitions (i.e., when participants rephrased or restated the description of a motion event without any external prompting) and 1.94% of clarifications, they were all considered together in the present chapter.

²⁸ See the yellow diamond in Figure 5.2.2

Overall, L1 French participants produced more utterances than L1 Dutch participants and L1 participants produced more utterances than L2 participants. The Shapiro-Wilk test was performed to assess whether the data follow a normal distribution. The results indicate that the data are normally distributed (FR: $W = 0.91533$, $p\text{-value} = 0.1635$; DU2a: $W = 0.87647$, $p\text{-value} = 0.079$; DU2c: $W = 0.9482$, $p\text{-value} = 0.6108$; DU: $W = 0.9403$, $p\text{-value} = 0.4221$; $p\text{-values} > 0.05$ = normality not rejected). Furthermore, Levene's Test for Homogeneity of Variance revealed that the variance was homogeneous ($p\text{-value} = 0.6741$, homogeneity if $p\text{-value} > 0.05$). A one-way ANOVA was subsequently performed, revealing that the only statistically significant difference was between French and DU2a ($p\text{-value} = 0.008$). These results will be brought together with those on the numbers of gestures in Chapter 6.

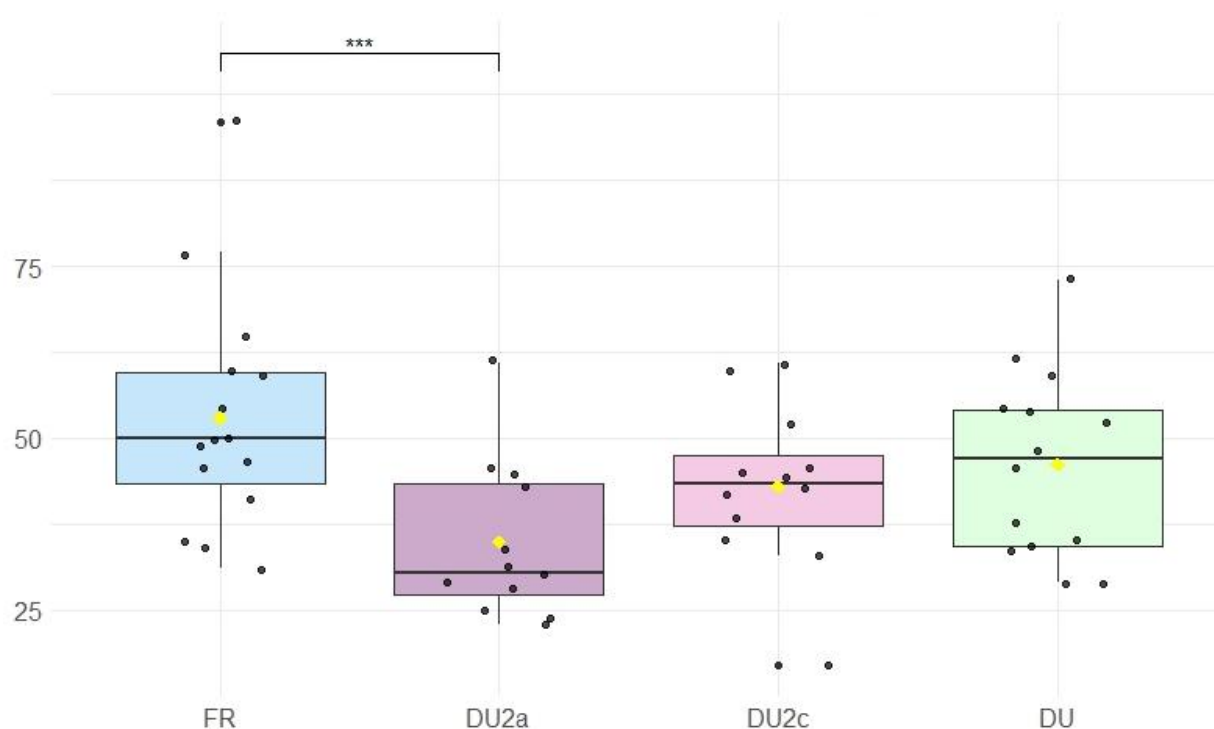


Figure 5.2.2: Distribution of utterances across the four groups

5.2.2. Type of events

Table 5.2.1 provides an overview of the proportion of the descriptions of the different types of events. Overall, we see the same pattern for the four groups: self-propelled motion events were described the most often (in 43.32% of cases in French, 39.38% in DU2a, 40.70% in DU2c and 45.51% in L1 Dutch), followed by location events

(respectively in 22.42%, 23.63%, 27.13%, and 22.45%), intentional caused motion events (respectively in 19.02%, 23.39%, 18.22% and 19.20%), unintentional caused motion events (respectively in 12.34%, 10.26%, 10.66%, , and 9.75%) and caused location events (respectively in 2.90%, 3.34%, 3.29%, and 3.10%). It can be concluded that the four groups show a similar behavior, which can partially be related to the stimuli, that were similar for all groups even though the participants were not given any instructions on what they had to retell.

	FR		DU2a		DU2c		DU		Total	
	n	%	n	%	n	%	n	%	n	%
Self-propelled motion	343	43.32%	165	39.38%	210	40.70%	294	45.51%	1012	42.65%
Intentional caused motion	151	19.02%	98	23.39%	94	18.22%	124	19.20%	467	19.66%
Unintentional caused motion	98	12.34%	43	10.26%	55	10.66%	63	9.75%	259	10.91%
Caused location	23	2.90%	14	3.34%	16	3.29%	20	3.10%	73	3.12%
Location	178	22.42%	99	23.63%	140	27.13%	146	22.45%	563	23.66%
Total	793	100.00%	419	100.00%	515	100.00%	647	100.00%	2374	100.00%

Table 5.2.1: Distribution of event types across the four groups

5.2.3. Number of (referential) gestures per utterance

This section is further divided into two sub-sections. The first one focuses on the total number of gestures per utterance, taking both referential and non-referential gestures into account whereas the second one elaborates on the number of referential gestures per utterance.

5.2.3.1. Total number of gestures per utterance

Table 5.2.2 shows the distribution of the total number of gestures per utterance across the four groups. The minimum number of gestures with an utterance is 0 whereas the maximum is fourteen.

In French, the majority of utterances are produced with one gesture (43.95%) and without gesture (33.25%). In addition, L1 French participants made two gestures in 16.75% of cases, three gestures in 4.16%, four in 1.26% and six in 0.63% of cases. In contrast, in L1 Dutch, the majority of gestures co-occur with one (50.31%) or two gestures (20.43%). In addition, 18.73% of utterances are produced without any gesture, 6.97% with three gestures, 2.01% with four gestures, 0.93% with five gestures, 0.46% with six gestures and 0.15% with seven gestures.

Only CLIL learners produced more than seven gestures with an utterance. In DU2a, three utterances (0.72%) occur with eight gestures. In DU2c, four utterances occur with eight gestures (0.78%), two with nine gestures (0.39%), one with ten gestures (0.19%), two with 11 gestures (0.39%), and one with 14 gestures (0.19%). Still, the majority of their utterances come with one or two gestures (respectively 31.98% and 22.67% for DU2a and 27.33% and 22.48% for DU2c). They also tend to make three gestures per utterance (DU2a: 15.27%; DU2c: 16.09%). In addition, they did not produce any gestures in 9.07% of cases (DU2a) and 9.50% (DU2c).

	FR		DU2a		DU2c		DU		Total	
	n	%	n	%	n	%	n	%	n	%
0	264	33.25%	38	9.07%	49	9.50%	122	18.73%	473	19.87%
1	348	43.95%	134	31.98%	141	27.33%	325	50.31%	948	39.96%
2	133	16.75%	95	22.67%	116	22.48%	132	20.43%	476	20.04%
3	33	4.16%	64	15.27%	83	16.09%	45	6.97%	225	9.47%
4	10	1.26%	41	9.79%	47	9.30%	13	2.01%	111	4.72%
5		0.00%	25	5.97%	37	7.17%	6	0.93%	68	2.86%
6	5	0.63%	14	3.34%	22	4.26%	3	0.46%	44	1.85%
7		0.00%	5	1.19%	10	1.94%	1	0.15%	16	0.67%
8		0.00%	3	0.72%	4	0.78%		0.00%	7	0.29%
9		0.00%		0.00%	2	0.39%		0.00%	2	0.08%
10		0.00%		0.00%	1	0.19%		0.00%	1	0.04%
11		0.00%		0.00%	2	0.39%		0.00%	2	0.08%
14		0.00%		0.00%	1	0.19%		0.00%	1	0.04%
Total	793	100.00%	419	100.00%	515	100.00%	647	100.00%	2374	100.00%

Table 5.2.2: Distribution of the number of gestures per utterance across the four groups

5.2.3.2. Number of referential gestures per utterance

Figure 5.2.3 displays the distribution of the number of referential gestures per utterance across event types in L1 French. In the context of self-propelled motion events ($n=343$), L1 French participants did not use any gestures in 49.71% of utterances, used one gesture in 38.08%, two gestures in 10.17%, three gestures in 1.74%, and five gestures in 0.29% of cases. A comparable distribution is observed in the descriptions of location events ($n=178$), with 51.69% of utterances lacking gestures, 35.39% featuring one gesture, 11.80% incorporating two gestures, and 1.12% involving six gestures. For utterances describing intentional caused motion events ($n=151$), no gestures were present in 43.79% of cases, while one gesture was used in 41.83%, two gestures in 12.42%, and three gestures in 1.96% of cases. In the case of unintentional caused motion events ($n=98$), 43.88% of utterances were accompanied by one gesture, whereas 43.88%

were devoid of gestures. Additionally, 11.22% of utterances were accompanied by two gestures, and 1.02% by three gestures. Finally, L1 French speakers predominantly produced one gesture when describing caused location events ($n=23$), accounting for 57.14% of cases. Furthermore, no gestures were made in 28.57% of cases, two gestures in 9.52%, and one gesture in 4.76% of cases.

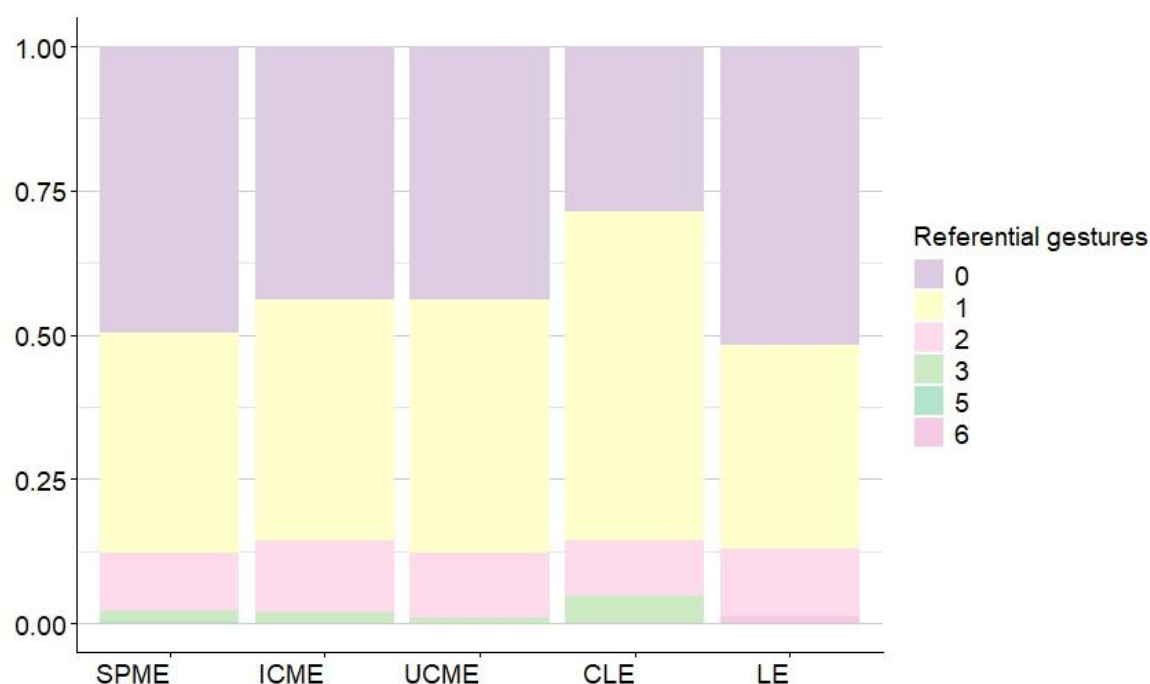


Figure 5.2.3: Distribution of the number of referential gestures per utterance across event types in L1 French

Figure 5.2.4 shows the distribution of the number of referential gestures per utterance across event types in DU2a. When describing self-propelled motion events ($n=165$), CLILa made one gesture per utterance in 36.97% of cases, zero gesture in 27.88%, two in 21.82%, three in 7.27%, four in 4.85% and five in 1.21%. In the analysis of intentional caused motion events ($n=98$), it was observed that 50% of the utterances were accompanied by a single gesture, 22.45% by two gestures, 14.29% by none, 8.16% by three gestures, 2.04% by four gestures, 2.04% by five gestures, and 1.02% by six gestures. Among the descriptions of unintentional caused motion events ($n=43$), 34.88% included one gesture, 25.58% included two gestures, 20.93% included no gestures, 11.65% included five gestures, 4.65% included four gestures, and 2.33% included seven gestures. The descriptions of caused location events ($n=14$) came with two gestures in 42.86% of cases, with one in 28.57%, three in 14.29%, four in 7.14% and zero in 7.14% of cases. Finally, to describe location events ($n=99$), In 37.7% of instances, CLILa did not

produce any gestures. In 30.30% of cases, one gesture was made, while two gestures were observed in 15.15% of cases. Three gestures occurred in 11.11% of instances, four gestures in 4.04%, and five gestures in 2.02% of cases.

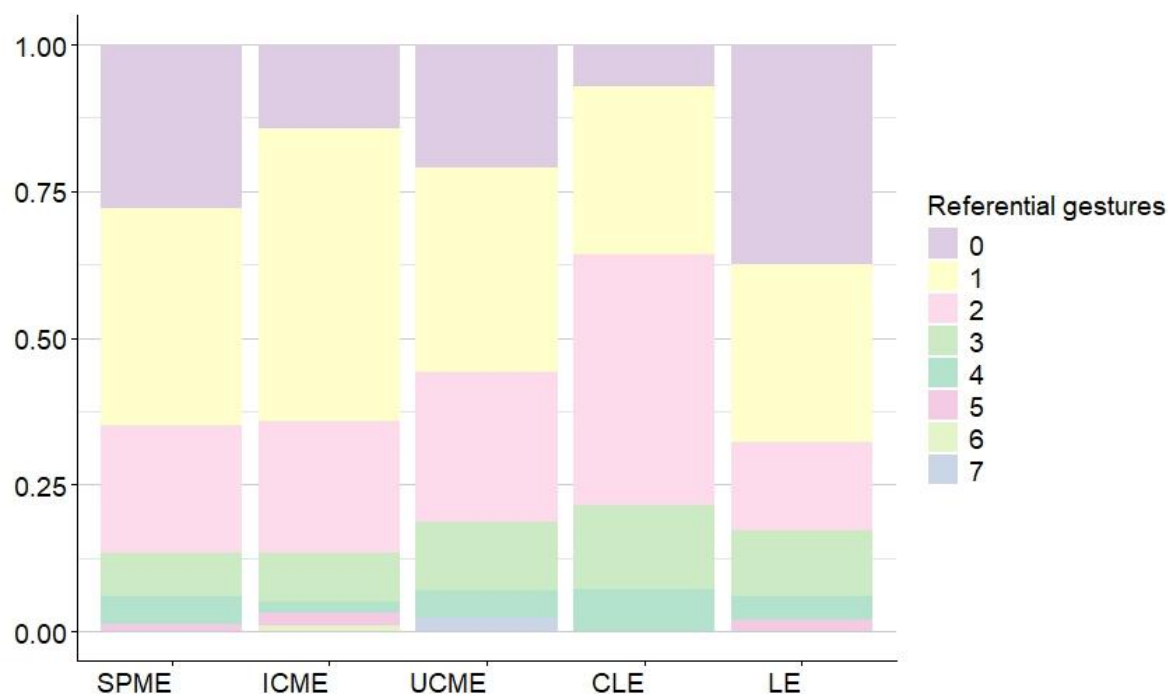


Figure 5.2.4: Distribution of the number of referential gestures per utterance across event types in DU2a

The distribution of the number of referential gestures per utterance across event types in DU2c is set out in Figure 5.2.5. 44.76% of the utterances describing self-propelled motion events ($n=210$) were accompanied by one gesture, 23.81% by no gesture, 19.52% by two gestures, 5.71% by three gestures, 2.38% by four, 2.38% by five and 1.43% by six gestures. With their descriptions of intentional caused motion events ($n=94$), CLILc produced one gesture in 44.68% of cases, two in 24.47%, none in 13.83%, three in 10.64%, four in 5.32% and five in 1.06%. In the context of unintentional caused motion events ($n=55$), 54.55% of utterances were accompanied by one gesture, 23.64% by two, 12.73% by none, 7.27% by three and 1.82% by four. When describing caused location events ($n=16$), CLILc used one gesture in 47.06% of cases, two in 41.18%, zero in 5.88% and three in 5.88% of cases. Finally, to locate entities ($n=140$), CLILc used one gesture in 43.57% of cases, none in 31.43%, two in 16.43%, three in 5%, four in 2.86% and five in 0.71%.

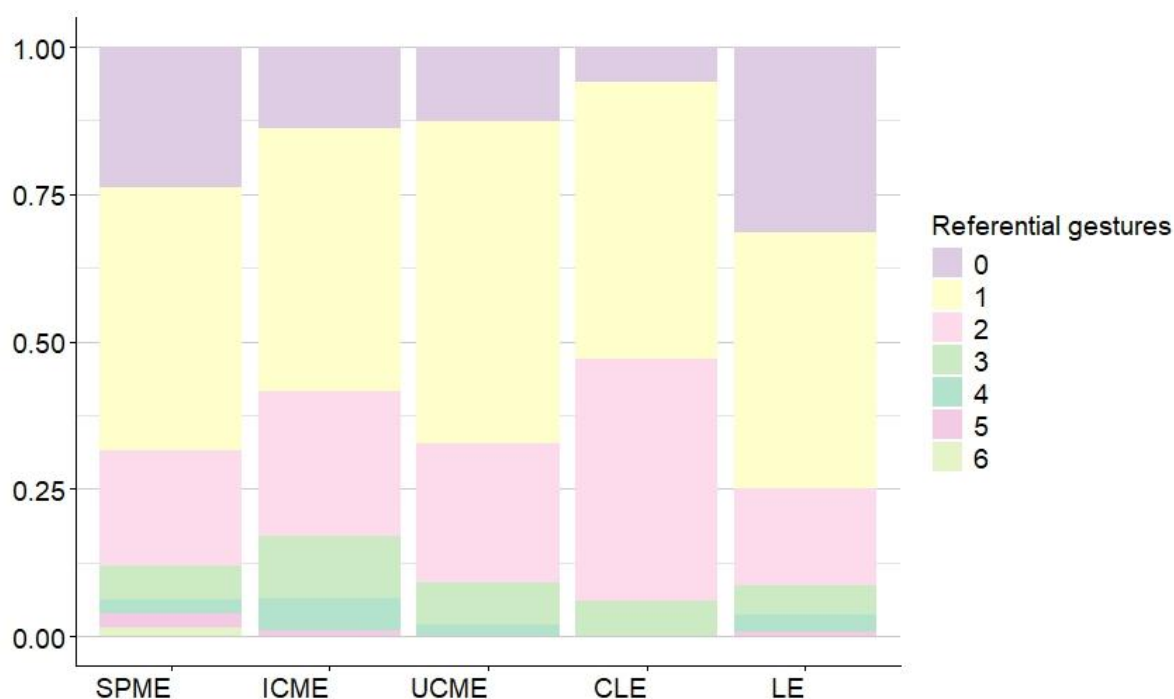


Figure 5.2.5: Distribution of the number of referential gestures per utterance across event types in DU2c

Figure 5.2.6 illustrates the distribution of the number of referential gestures per utterance across event types in L1 Dutch. In the context of self-propelled motion events ($n=294$), L1 Dutch participants used one gesture in 48.98% of cases, none in 30.61%, two in 14.97%, three in 3.74%, four in 1.36% and six in 0.34%. When uttering intentional caused motion events ($n=124$), 54.20% of their utterances were accompanied by one gesture, 28.24% by none, 12.21% by two, 3.82% by three, 0.76% by four and 0.76% by six. In the case of unintentional caused motion events ($n=63$), they used one gesture in 52.38% of cases, none in 31.75%, two in 14.29% and one in 1.59%. Utterances describing caused location events ($n=20$) came with one gesture in 81.82% of cases and none in 18.18%. Finally, when locating entities, CLILc used no gestures in 46.62% of cases, one in 43.92%, two in 4.41% and three in 4.05% of cases. Finally, when locating events ($n=146$), L1 Dutch participants produced no gestures in 46.26% of cases, one in 44.22%, two in 6.12% and three in 3.40% of cases.

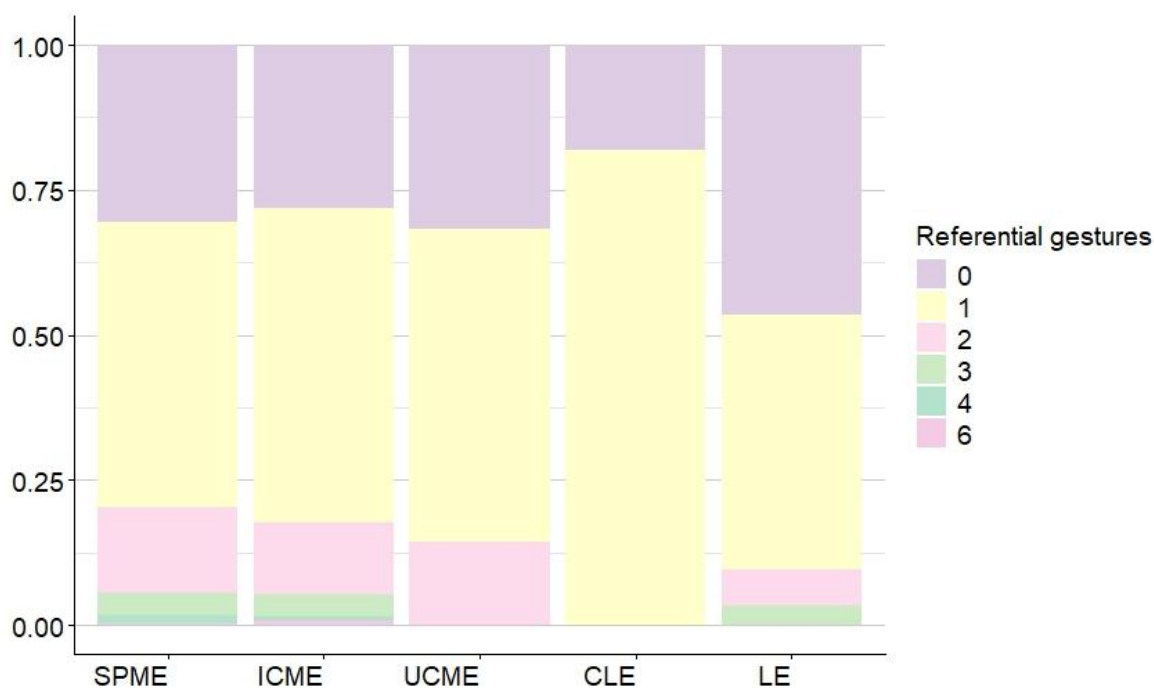


Figure 5.2.6: Distribution of the number of referential gestures per utterance across event types in L1 Dutch

5.2.4. Conclusion

Overall, CLIL learners tend to produce a higher number of gestures than L1 speakers. Furthermore, the internal distribution of referential gestures remains similar within each group irrespective of the event type except for location events which seem to elicit fewer gestures. L1 Dutch participants and CLIL participants produced a higher number of referential gestures per utterance more often than L1 French participants no matter the type of event. In addition, CLIL learners tend to accumulate (referential) gestures more than L1 speakers as can also be seen in Figure 5.2.7. They produce two gestures and more per utterance more often than L1 speakers both in 2021 and in 2023, independently of the type of events. The learners' behavior is rather consistent throughout the years if we look at frequencies, but the absolute values show an increase in gesture rate. This will be further discussed in Chapter 6.

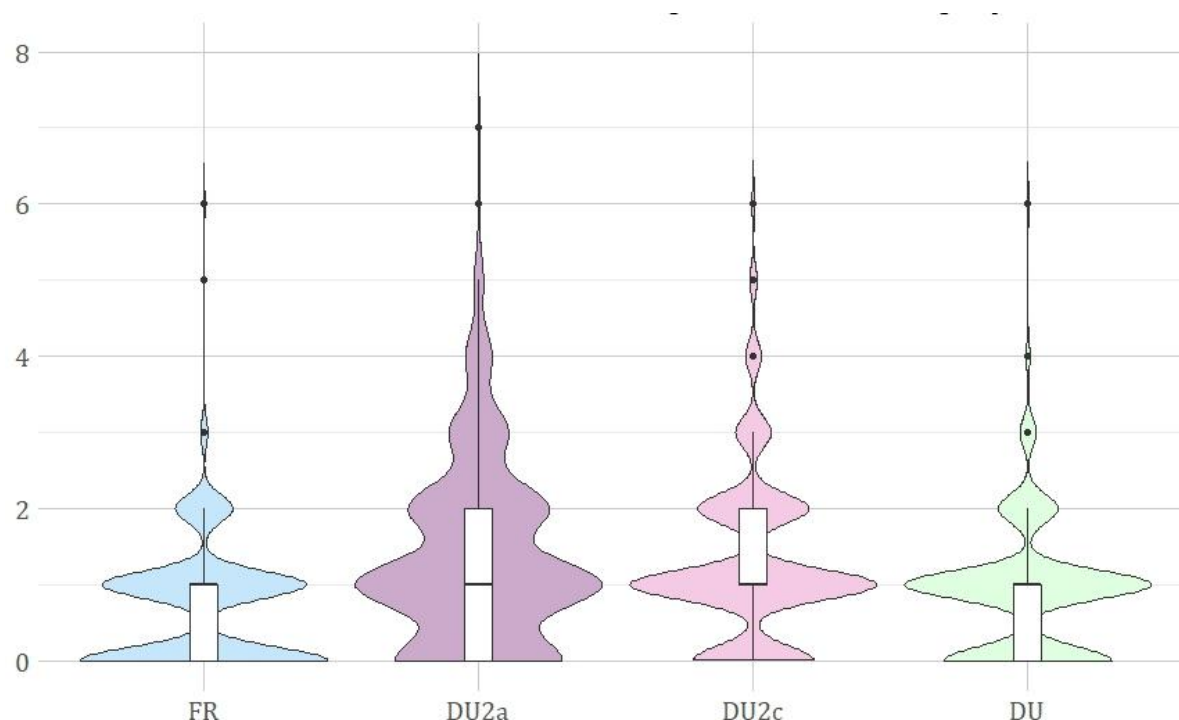


Figure 5.2.7: Distribution of referential gesture counts per utterance across the four groups based on relative frequency

5.3. Self-propelled motion events

This section analyzes the semantic components encoded in verbs that describe self-propelled motion events (Section 5.3.1), the semantic components present in entire utterances (Section 5.3.2), the criterion of boundary crossing or non-crossing (Section 5.3.3), and the density of semantic components with and without gestures (Section 5.3.4). Lastly, Section 5.3.5 zooms in on CLIL learners and Section 5.3.6 provides some concluding remarks.

5.3.1. Verb semantics

Figure 5.3.1 illustrates the distribution of semantic components in the verbs used to describe self-propelled motion events (FR=343, DU2a=165, DU2c=210, DU=294).

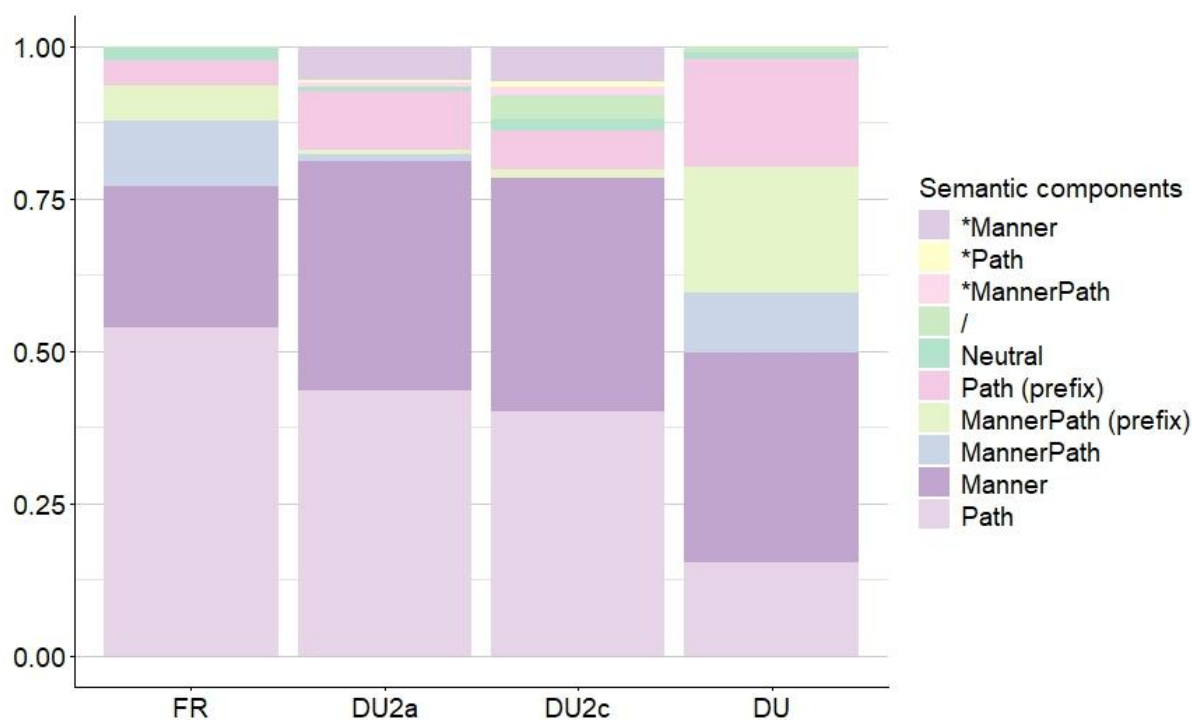


Figure 5.3.1: Semantic components in verbs across the four groups (SPME)

L1 French participants encoded path in the verb in 53.78% of cases as *passer* [to pass] in (77) whereas L1 Dutch people did so in 15.31% of cases.

(77) Titi il passe au-dessus de *de l'eau des alligators (FR1, ME71)
 [Titi goes over *the water of the alligators]

CLIL learners are positioned between the L1 groups as they encoded path in the verb in 43.64% of cases in 2021 (DU2a) and 40.19% of cases in 2023 (DU2c). In addition, there are three occurrences of CLIL learners' attempt to use path verbs (cf. *Path) that were either incorrect in the context (i.e., *passen* in the meaning of *to pass by*) or in another language (i.e., *sortir* [exit]). Finally, verbs in which path is encoded in both the prefix and the root were used in 4.97% in L1 French, 9.70% in DU2a, 6.22% in DU2c and 17.69% in L1 Dutch as illustrated in (78).

(78) en dan gat de kat weg (DU12, ME28)
 [and then the cat goes away]

Furthermore, manner verbs were used in 23.26% of instances in L1 French, 34.55% in L1 Dutch, 37.58% in DU2a, and 38.38% in DU2c as illustrated in (79). Notably, learners used these verbs more frequently than both groups of L1 speakers. Additionally, CLIL participants endeavored to use manner verbs in 5.45% (DU2a) and 5.74% (DU2c) of

cases. This is illustrated by the value “*Manner”, which denotes an incorrect form of the verb (e.g., “*vluggen*” instead of “*vliegen*” [fly]) or the usage of a manner verb from another language (e.g., jump or *ramer* [row]).

(79) <> hij <> dus Grosminet loopt achter hem (CLIL1c, ME69)

[He <> so Sylvester runs behind him]

In addition, verbs that express both manner and path were used in 10.76% of cases in L1 French, 9.86% in L1 Dutch and 1.21% in DU2a. Again, learners sometimes wanted to express manner and path and used either a wrong (or nonexistent) form such as *de honderd voeten doen* [literally [to do the hundred feet] which is an attempt to translate *faire les cent pas* [pace up and down] or a verb in another language (i.e., *s'échapper* [to escape]. This only occurred in 0.61% of cases in DU2a and 1.44% in DU2c. Finally, the data also reveal the use of complex verbs in which manner is encoded in the root and path in a prefix. These verbs are mostly to be found in L1 Dutch (20.75%, see (80)). These verbs seem to be complicated or unknown to the learners as there is only one occurrence in DU2a (0.61%) and four in DU2c (1.91%). In French, they were used in 5.81% of cases.

(80) en die springt zo weg uit het bootje (DU2, ME85)

[and he jumps away out of the boat]

The use of neutral verbs in the case of self-propelled motion events refers to cases where the event was not described as a motion event but still conceptualized as such (as gestures demonstrate) and the use of sounds like onomatopoeia to replace a verb (e.g., “kwikwi” for a bird flying) but these were very rare cases (2.03% in French, 0.61% in DU2a, 1.91% in DU2c and 1.02% in L1 Dutch). Finally, there were utterances without any verb (0.29% in French, 3.83% in DU2c, 1.02% in DU2c). It could be either implicit (and linked to the previous utterance) or replaced by a pause or nonspeech sound and accompanied by a gesture when the participant did not know the word. Figure 5.3.2 illustrates this phenomenon: the participant does not know how to say pole-vault in Dutch, and she traces the path of the motion while making a nonspeech sound.



Figure 5.3.2: Path gesture co-occurring with a non-speech sound in "om <> %" [to <> %]
(CLIL3c, ME104)

Chi squared tests were performed to determine whether the distributions of the different groups were significantly different. The tests revealed that the most significant difference is between L1 French and L1 Dutch ($\chi^2 = 130.73992$, p-value = 8.978417×10^{-26}). The differences between L1 French and DU2a ($\chi^2 = 61.90792$, p-value = 5.740815×10^{-10}), L1 French and DU2c ($\chi^2 = 82.76253$, p-value = 4.559224×10^{-14}), DU-DU2a ($\chi^2 = 103.08931$, p-value = 3.726896×10^{-18}) and L1 Dutch and DU2c ($\chi^2 = 127.89360$, p-value = 3.213834×10^{-23}) are also significant. However, there is no significant difference between DU2a and DU2c ($\chi^2 = 13.08161$, p-value = 1.589483×10^{-1}). These results confirm the typological differences between French and Dutch and indicate that CLIL learners show their own pattern between the two L1's, but also that there does not seem to be any significant development between the two test periods.

If we now have a look at the range of verbs (and verbal constructions), we see that L1 Dutch speakers used the widest variety of verbs (see Figure 5.3.3). In fact, they used 74 different verbs, compared to 63 in French, 19 in DU2a and 18 in DU2c. 27 path verbs (e.g., *monter* [to go up], *reculer* [to go backwards]), three path verbs with a path prefix (e.g., *poursuivre* [to pursue], *s'en aller* [to go away]), 18 manner verbs (e.g., *se promener* [to stroll], *courir* [to run]), 12 manner-path verbs (*faire les cent pas* [to pace up and down], *faire un saut à la perche* [to pole-vault]), and three manner-path verbs with a prefix (e.g., *s'envoler* [to fly away], *s'enfuir* [to escape]) were identified in French.



Figure 5.3.3: Number of different verbs across the four groups (SPME)

In contrast, only four path verbs were found in the Dutch data (e.g., *volgen* [to follow], *komen* [to come]), together with 20 path verbs with a prefix (e.g. *weggaan* [to go away], *binnenkomen* [to come into]), 14 manner verbs (e.g., *klimmen* [to climb], *kruipen* [to crawl], eight manner-path verbs (e.g., *ijsberen* [to pace up and down], *vluchten* [to escape]) and 28 manner-path verbs with a prefix (e.g., *overvliegen* [to fly over], *wegrennen* [to run away]) . CLILa learners used 6 path verbs, 6 path verbs with a prefix, 5 manner verbs, one manner-path verb and one manner-path verb with a prefix. In the same vein, CLILc used four path verbs, five path verbs with a prefix, seven manner verbs, no manner-path verbs and two manner-path verbs with a prefix. These data do not include the incorrect forms and the verbs uttered in other languages. The data reflects the manner character of Dutch and the path character of French; however, it is observed that French speakers also tend to focus on manner, similar to how Dutch speakers also emphasize path, as indicated by PathV (prefix). Additionally, CLIL learners frequently use the same verbs multiple times. For instance, *gaan* and *lopen* were used respectively 50 times and 34 times in DU2a and 62 times and 43 times in DU2c.

5.3.2. Overall speech picture

Figure 5.3.4 presents the semantic components encoded in speech in the four groups.

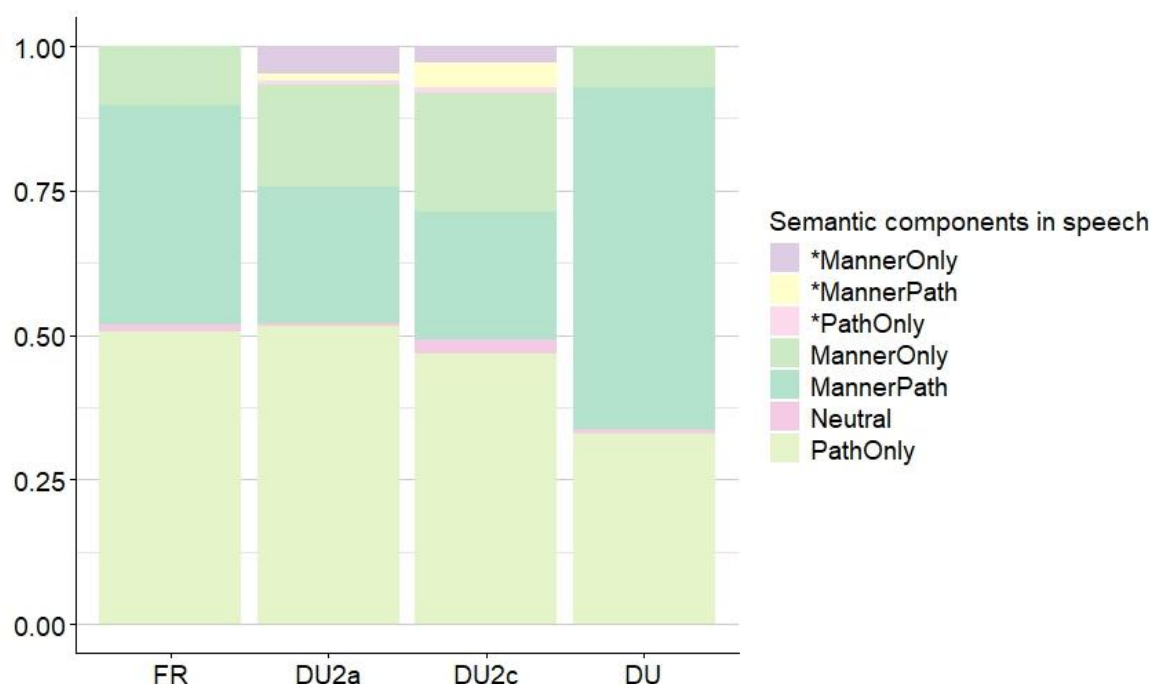


Figure 5.3.4: Semantic components encoded in speech across the four groups (SPME)

When describing self-propelled motion events, L1 French participants described only path in 50.58% of cases (see (81)), both manner and path in 38.08% as illustrated in (82) and only manner in 10.17% of cases .

(81) Grosminet il a fait des aller-retours devant <> l'enclos (FR4, ME26)
[Sylvester went back and forth in front of the pen]

(82)*Grosminet qui court après Titi (FR8, ME65)
[*Sylvester who is running after Tweety]

In contrast, L1 Dutch participants described manner and path in 59.18% of cases as in (83), only path in 32.99% as illustrated in (84) and only manner in 7.14% of cases.

(83) en dan loopt die poes weg via een vierkant in de muur (DU1, ME92)
[then the cat runs away via a square in the wall]

(84) en die kat is terug naar buiten dat rek gegaan (DU3, ME23)
[and the cat went back outside onto that rack]

CLILa described only path in 51.52% (+0.61% of *PathOnly) of cases (see (85), only manner in 17.58% (+4.85% of *MannerOnly) as illustrated in (86) and both manner and path in 23.64% (+1.21% of *MannerPath) of cases.

(85) en de kat gaat in een box (CLIL7a, ME29)

[and the cat goes into a box]

(86) En <> % hij *hij<> hij loop (CLIL9a, ME74)

[and <> % he *he <> runs]

CLIL2c showed a similar behavior as they described only path in 46.89% (+0.96%) as illustrated in (87) where the participant wants to say that Tweety is flying but does not seem to know the Dutch verb, manner and path in 22.49% (see (88) and only manner in 20.10% (+ 4.85%) of cases.

(87) Dus Titi <> / gaat in de lucht (CLIL10c, ME66)

[Tweety goes in the air]

(88) dus hij loopt uit de *het water van de alligator (CLIL6c, ME75)

[he runs out of the *the alligator water]

CLIL learners predominantly encoded a single component both in 2021 and 2023. They described path with a frequency comparable to that of L1 French speakers in 2021 and slightly less frequently in 2023.

5.3.3. Boundary crossing

Figure 5.3.5 illustrates the distribution of self-propelled boundary crossing events across the four groups.

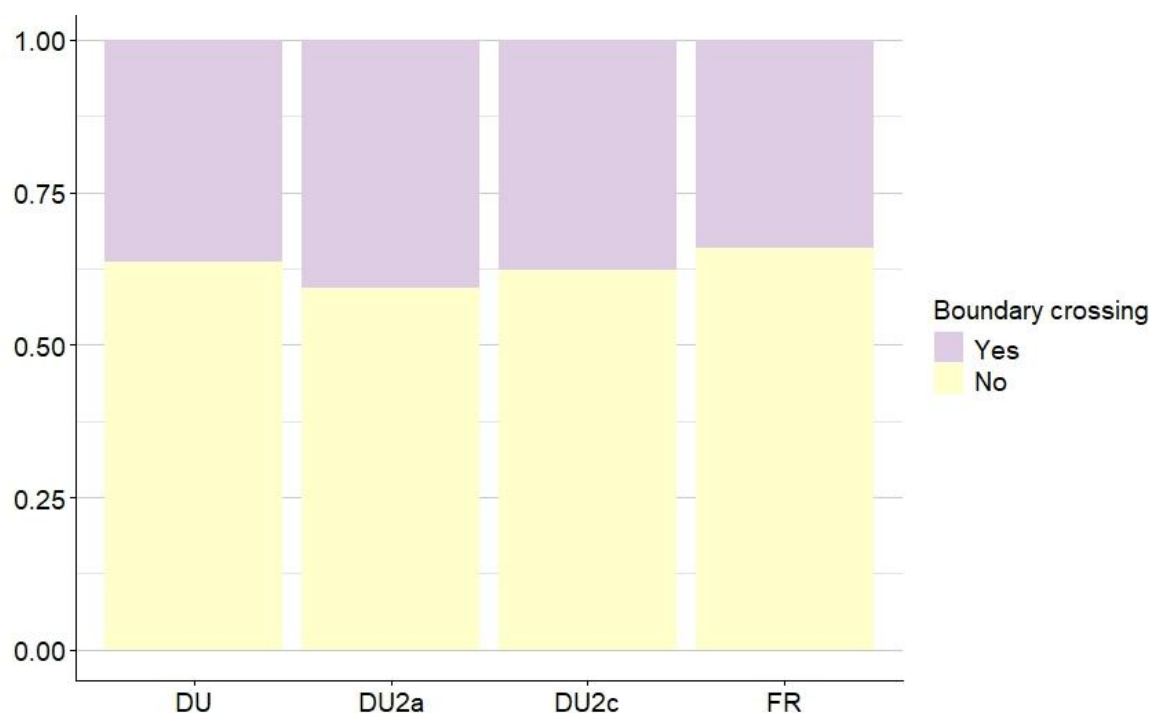


Figure 5.3.5: Boundary crossing self-propelled motion events across the four groups

65.68% of the French descriptions (e.g., (81), (82)), 59.39% of the utterances in DU2a (e.g., (86), 61.84% of the descriptions in DU2c (e.g., (87)) and 63.61% of L1 Dutch utterances (see (89)) are non-boundary crossing. There is thus no significant difference between any of the groups.

(89) De kat loopt op en af bij een tijgerkooi (DU9, ME77)

[the cat walks up and down by a tiger cage]

Figure 5.3.6 gives us an overview of the distribution of boundary crossing events per verb type across the four groups.



Figure 5.3.6: Boundary crossing self-propelled motion events per verb type across the four groups

In L1 French, self-propelled boundary crossing events feature a path verb in 75.86% of cases, a manner verb in 6.90%, a manner-path verb in 6.76%, a path verb with a prefix in 5.17% and a manner-path verb with a prefix in 4.31% of cases. Boundary crossing events with a manner verb occurred with the verbs *sauter* [jump], *courir* [run] and *faire un bond* [make a leap] as respectively illustrated in (90), (91) and (92).

(90) et il saute dans un enclos (FR3, ME70)

[and he jumps into a pen]

(91) <> après il court dans sa cage (FR14, ME88)

[<> then he runs into his cage]

(92) il fait un bond de *vers la droite hors du bassin (FR5, ME87)

[he makes a leap *to the right out of the pool]

In DU2a, the participants described boundary crossing events with a path verb in 68.66% of cases, with a path verb with a prefix in 14.93%, a manner verb in 10.45%, a manner-path verb with a prefix and a manner-verb both in 1.49% of cases.

CLILc learners show a similar distribution with the use of a path-verb to express a boundary crossing event in 69.92% of cases, the use of a path verb with a prefix in 13.92%, a manner verb in 8.86%, a manner-path verb with a prefix in 1.27% and with no verbs in 2.53% of cases as illustrated in (93) .

(93) dus hij % <> uit (CLIL6c, ME92)

[so he % <> out]

In contrast, in L1 Dutch, boundary crossing events are expressed with a manner-path verb in 29.91% of cases, a path verb with a prefix in 26.17%, a manner verb in 17.76% of cases, a path verb in 14.95% and a manner-path verb in 10.28% of cases.

Pearson's Chi-squared tests were conducted and they revealed that the distributions of boundary crossing events across FR-DU (X-squared = 89.467, p-value < 2.2e-16), DU-DU2a (X-squared = 63.179, p-value = 3.49e-11), DU-DU2c (X-squared = 75.318, p-value = 1.236e-13) and FR-DU2c (X-squared = 18.753, p-value = 0.008999) were significant.

5.3.4. Density in speech with and without referential gestures

This section compares the density of semantic components in speech when utterances are accompanied by referential gestures without taking gesture semantics into account versus when they are not. Considering the individual variation in gesture production (some participants producing a lot of gestures others producing almost no gestures), I found it relevant to look at the density of semantic components in speech in relation to the absence or presence of gestures. The aim of the section is therefore to determine whether the utterances that did not feature any referential gestures are semantically richer than the ones that were accompanied by referential gestures. Figure 5.3.7 illustrates the distribution of semantic components in speech per group when utterances feature gestures and when they do not.

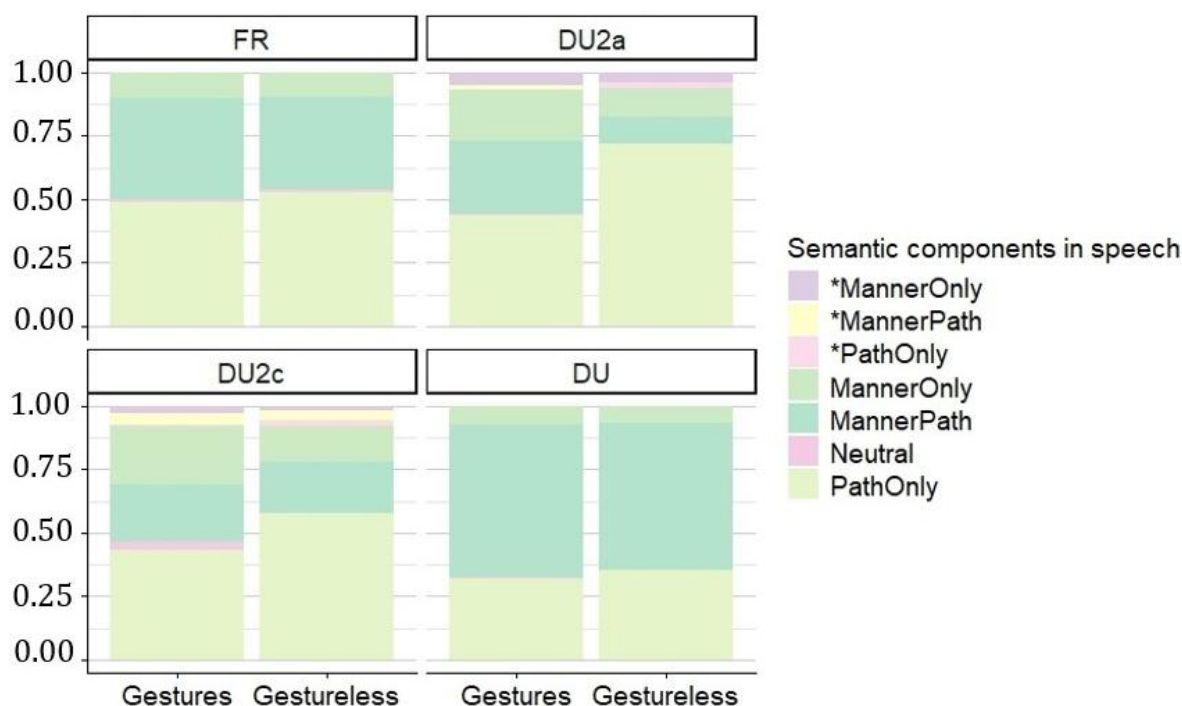


Figure 5.3.7: Density of semantic components in speech in relation to the presence or absence of referential gestures (SPME)

In French, 50.29% of utterances were accompanied by gestures. Utterances without accompanying gestures convey only path in 52.63% of instances, both manner and path in 36.25% of instances, and solely manner in 9.94% of instances. Similarly, utterances that include gestures describe only path in 48.55% of cases, both path and manner in 39.88%, and only manner in 10.40%. In other words, the presence of gestures does not appear to enhance the semantic richness of the utterances.

In DU2a, 72.12% of utterances occurred with gestures. Utterances that do not feature co-speech gestures express only path in 71.74% (+2.17% for *PathOnly) of cases, only manner in 10.86% (+4.35% for *MannerOnly) of cases, and manner and path in 10.86% of cases. In contrast, utterances co-occurring with gestures describe only path in 43.7% of cases, manner and path in 28.57%, and only manner in 20.26% (+5.04% for *MannerOnly). Here, utterances are semantically richer when they feature gestures.

In DU2c, 76.08% of utterances feature gestures. Gestureless utterances convey only path in 58% (+2% for *PathOnly) of cases, manner and path in 20% (+4% for *MannerPath) and manner-only in 14% (+2% for *MannerOnly). Utterances accompanied by gestures

convey only path in 43.4% (+0.63% for *PathOnly), only manner in 22.64% (+3.14% for *MannerOnly), and manner and path in 22.64% (+ 4.40% for *MannerPath) of cases.

In L1 Dutch, 69.39% of utterances feature gestures. Utterances without co-occurring gestures convey manner and path in 57.78% of cases, only path in 35.56% and only manner in 6.67% of cases. Here, it could be thought that utterances without gestures are semantically rich (as they are richer than the French ones) but again, the distribution of semantic components in utterances with gestures is similar to the one of utterances without gestures. In fact, utterances with gestures express manner and path in 59.8% of cases, only path in 31.86% and only manner in 7.35% of cases.

Overall, participants did not compensate for their lack of gestures by incorporating additional information into their speech. Conversely, L1 speakers exhibited consistent speech patterns regardless of whether they gestured. CLILa learners, however, encoded a greater number of semantic components in their speech when they did gesture. Nevertheless, this pattern was not observed two years later.

5.3.5. Zoom in on CLIL learners

Figure 5.3.8 presents the semantic components encoded in the verbs used by CLIL learners in 2021 and 2023 to describe self-propelled motion events.

Overall, four participants made a similar number of descriptions in 2021 and 2023 (CLIL1, CLIL9, CLIL10 and CLIL15), five participants produced more utterances (CLIL3, CLIL6, CLIL12, CLIL13 and CLIL14) and three participants uttered fewer descriptions (CLIL2, CLIL5, and CLIL7).

Six learners (CLIL1, CLIL3, CLIL9, CLIL12, CLIL13 and CLIL14) expressed manner in the verb more in 2023 than they did in 2021. Some of them (CLIL1, CLIL7, CLIL9, CLIL10 (slight difference) used fewer path verbs in 2023 than in 2021 while others used more path verbs (CLIL3, CLIL6, CLIL13, and CLIL14).

The use of path verbs with a prefix is still rather limited. CLIL1, (CLIL3) and CLIL7 tend to use them from time to time, surprisingly more in 2021 than in 2023. In addition, five other learners (CLIL6, CLIL9, CLIL10, CLIL12 and CLIL13) used them once or twice.



Figure 5.3.8: Semantic components in verbs across CLIL learners in 2021 and 2023
(SPME)

Lastly, the complex verbs in which manner is encoded in the root and path in a prefix were barely used in L2 Dutch. They were only found in the data of CLIL1 and CLIL7 but with very few occurrences.

Let us now have a closer look at the number of different verbs that each CLIL learner used in 2021 and 2023 to describe self-propelled motion events (see Figure 5.3.9). Overall, learners did not use more different verbs in 2023 than they did in 2021. Only CLIL12 and CLIL13 used more different verbs but the differences are very small if we do not take wrong forms into account. Only CLIL1, CLIL7 and CLIL12 used more manner verbs in 2023 than they did in 2021 and only CLIL1 both in 2021 and 2023 and CLIL7 in 2023 used one manner-path verb with a prefix. CLIL1 and CLIL7 are the two learners who have the highest proficiency levels of the group (both B2 in 2021 and respectively B2 and B1 in 2023). The use of complex verbs seems to start from higher levels on. Lastly, path verbs with a prefix were used by CLIL1 (3 different ones), CLIL3 (3 different ones)

and CLIL7 (3 different ones) in 2021 and by CLIL1 (2 different ones), CLIL3 (2 different ones), CLIL6 (one verb), CLIL7 (3 different ones), CLIL9 (one verb), CLIL10 (one verb), CLIL12 (one verb) and CLIL13 (one verb) in 2023.



Figure 5.3.9: Number of different verbs used by CLIL learners in 2021 and 2023 (SPME)

Figure 5.3.10 shows the semantic components each CLIL learners encoded in speech in 2021 and 2023 when describing self-propelled motion events.

Six learners (CLIL1, CLIL3, CLIL7, CLIL9, CLIL12 and CLIL14) expressed both manner and path more in 2023 than in 2021 and four learners (CLIL1, CLIL2, CLIL7 and CLIL9) conveyed path only less in 2023 than in 2021. In contrast, five learners (CLIL3, CLIL6, CLIL12, CLIL13 and CLIL14) expressed only path more in 2023 than in 2021. In addition, six learners (CLIL1, CLIL6, CLIL9, CLIL12, CLIL13 and CLIL14) conveyed only manner more in 2023 than in 2021 while CLIL7 did so less in 2023 than in 2021. Lastly, CLIL15 showed a similar behavior in 2021 and 2023 and CLIL5 expressed manner and path less in 2023 than in 2021.

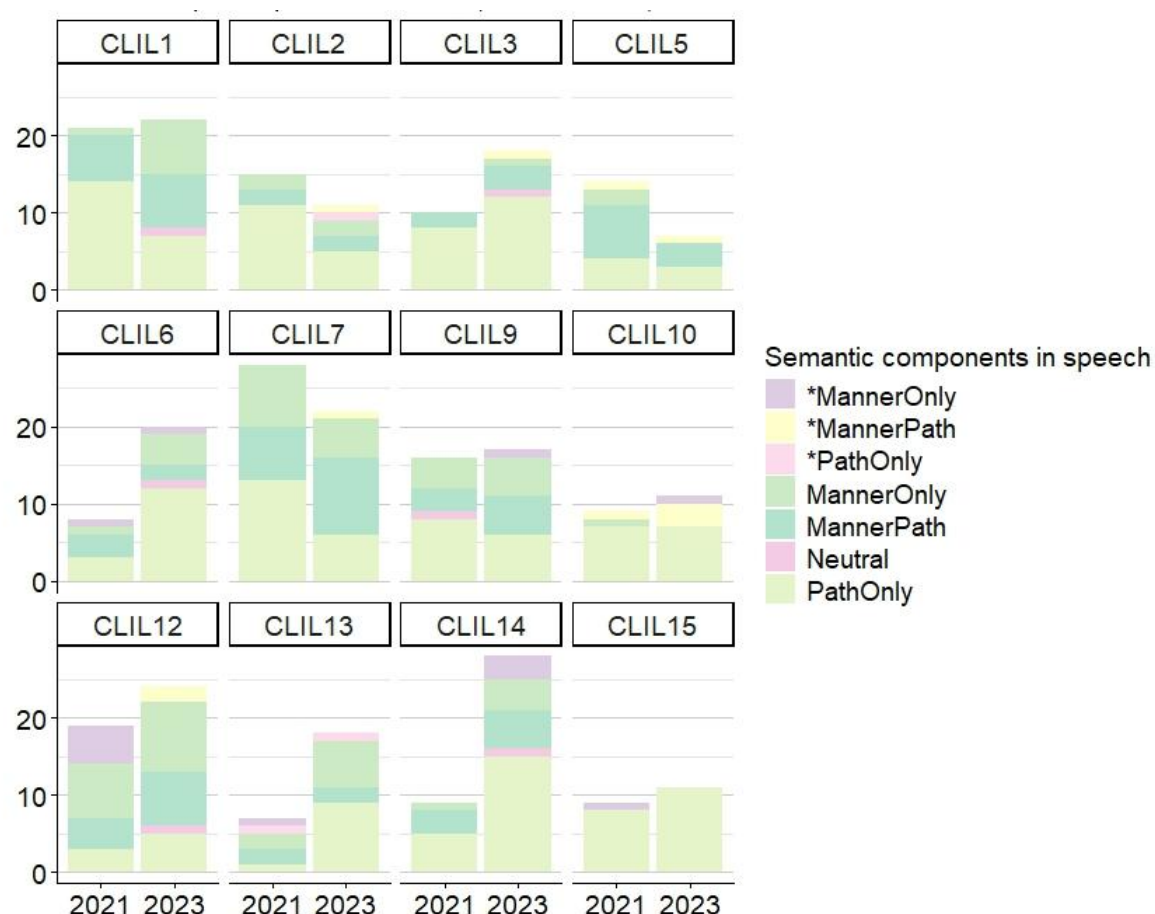


Figure 5.3.10: Semantic components encoded in speech across CLIL learners in 2021 and 2023 (SPME)

Overall, learners do not adhere to a uniform pattern. More complex verbs tend to become accessible at higher proficiency levels; however, only a limited number of these verbs are acquired, and they remain infrequently used. Lastly, encoding several components in one utterance seems difficult for some learners.

5.3.6. Conclusion

In describing self-propelled motion events in speech, L1 French speakers predominantly use path verbs, followed by manner verbs and manner-path verbs. In contrast, L1 Dutch speakers primarily use manner verbs, manner-path verbs with a prefix, path verbs with a prefix, and, lastly, path verbs. CLIL learners also tend to favor path verbs, albeit slightly less frequently than native French speakers. Additionally, they use manner verbs more frequently than the native speaker groups of both languages. The analysis of the verb range demonstrated the diversity of French and Dutch verbs. Furthermore, it revealed that the learners repeatedly used a limited set of verbs and either avoided or were

unaware of the extensive variety of Dutch verbs. Notably, they used very few manner-path verbs with a prefix and path verbs with a prefix.

Regarding the semantic elements encoded in utterances, L1 Dutch speakers most frequently encode both manner and path. Notably, half of the French utterances convey only path. Similarly, L2 learners tend to focus on either path or manner exclusively, finding it more challenging to combine both semantic components and exhibiting their own pattern. In addition, the L2 pattern stayed similar in 2023.

No significant differences were observed in terms of boundary crossing among the different groups. However, when this parameter is examined in relation to the semantics of the verb present in the utterance, distinctions among the groups become apparent. Specifically, in Dutch, boundary crossing events are expressed using manner-path verbs with a prefix, path verbs with a prefix, manner verbs, and path verbs. In contrast, in French, these events are predominantly described using path verbs. L2 learners also tend to use path verbs (and path verbs with a prefix) in Dutch to express such events.

Finally, the density analysis revealed that speakers did not encode additional semantic components in speech to compensate for a lack of gestures.

5.4. Intentional caused motion events

This section examines the semantic components encoded in verbs that describe intentional caused motion events (Section 5.4.1), the semantic components present in entire utterances (Section 5.4.2), the criterion of boundary crossing or non-crossing (Section 5.4.3), and the density of semantic components with and without gestures (Section 5.4.4). Lastly, Section 5.4.5 zooms in on CLIL learners and Section 5.4.6 offers some concluding remarks.

5.4.1. Verb semantics

Figure 5.4.1 illustrates the distribution of the semantic components in the verbs used to describe intentional caused motion events across the four groups (FR=151, DU2a=98, DU2c=94, DU=124).

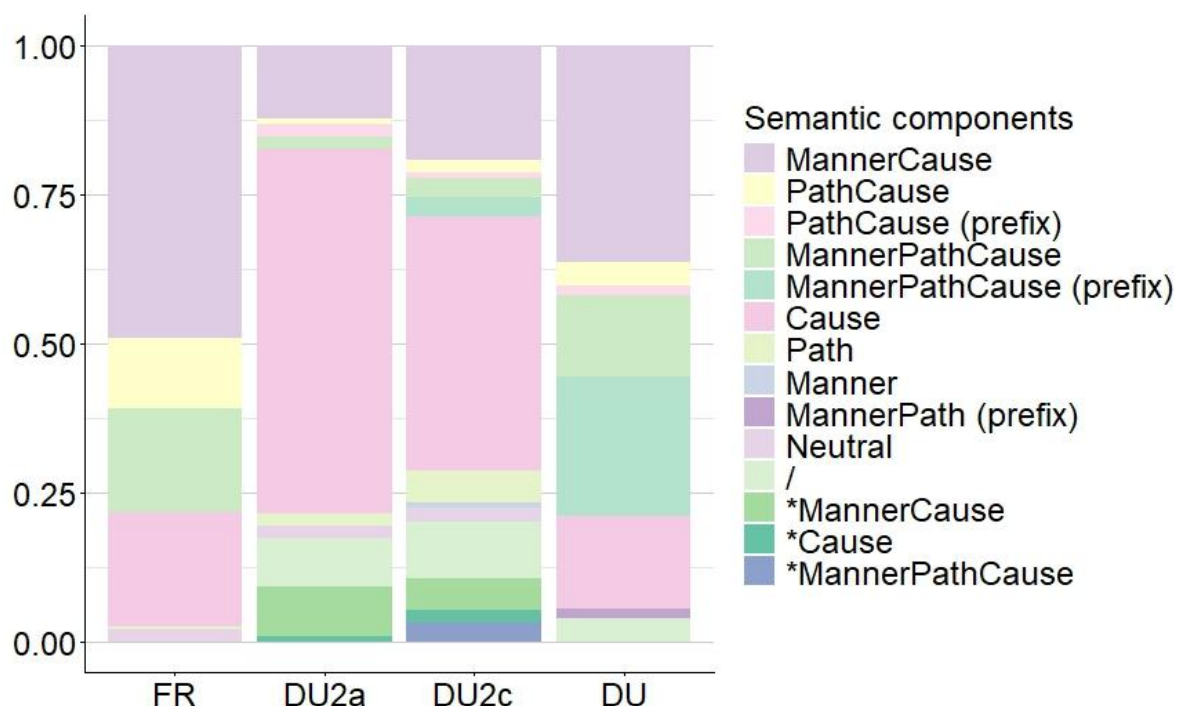


Figure 5.4.1: Semantic components in verbs across the four groups (ICME)

L1 French participants encoded manner and cause in verbs in 49.01% of cases as in (94), only cause in 19.21%, manner, path and cause in 17.22% and path and cause in 11.92%. In addition, they used neutral verbs in 1.99% and one path verb in 0.66% of cases.

(94) Titi a jeté sa pelure de banana (FR4, ME108)

[Tweety has thrown its banana peel]

CLILa participants encoded only cause in verbs in 60.82% of cases as in (95) where the throwing action is described with the verb *geven* [give]. In addition, they expressed manner and cause in verbs in 12.37% of cases. In addition, they used no verbs in 9.68% of cases, wrong forms or manner and cause verbs from other languages in 8.25% of cases, neutral, manner-path-cause, path-cause with a prefix and path verbs each in 2.06% of cases. Lastly, they used one path-cause verb (1.03%) and one *cause verb (1.03%).

(95) maar de directeur van de zoo <> geef de voedsel aan de tijger (CLIL3a, ME36)

[but the director of the zoo gives food to the tiger]

CLILc participants used verbs that only denote cause²⁹ in 41.94% as illustrated in (96) where the participant used the verb *nemen* [take] to describe the zoo worker pushing the cart to the tiger cage. In addition, they used verbs that express manner and cause in 19.35% and no verbs in 9.68%. They also attempted to use manner-cause verbs in 8.60% and used path verbs in 5.38%, manner-path-cause verbs with a prefix, manner-path-cause verbs and *manner-path-cause verbs each in 3.23%. Besides, there are two occurrences of path-cause verbs, neutral verbs, and *cause verbs (2.15% each) and one occurrence of a path-cause verb with a prefix and a manner verb (1.08% each).

(96) er is één moniteur van de zoo die neemt deze doos (CLIL7c, ME33)

[there is a zoo monitor that takes this box]

L1 Dutch participants described intentional caused motion events using manner-cause verbs in 36.29% of cases, manner-path-cause verbs with a prefix in 23.39% as *wegtrappen* [kick away] in (97), cause verbs in 15.32% and manner-path-cause verbs in 13.71%. In addition, they used path-cause verbs and no verbs in 4.03% of case each and path-cause verbs with a prefix and manner-path verbs with a prefix in 1.61% of cases each.

(97) en dan trapt de leeuw de kat weg in een beerkuil (DU8, ME100)

[and then the lion kicks the cat away into a bear pit]

Pearson's chi squared tests were performed to determine whether the distributions of semantic components in verbs between the different groups were significantly different. The tests revealed that the differences between L1 French and L1 Dutch ($\chi^2=58.29312$, p-value=2.855307e-09), L1 French and DU2a ($\chi^2=104.25284$, p-value=2.164768e-18), L1 French and DU2c ($\chi^2=85.09328$, p-value=4.367317e-13), L1 Dutch and DU2a ($\chi^2=97.88237$, p-value=4.685294e-16), and L1 Dutch and DU2c ($\chi^2=69.92877$, p-value=8.273044e-10) were significant whereas those between DU2a and DU2c were not ($\chi^2=15.36018$, p-value=2.223277e-01).

²⁹ Cause verbs are understood here as verbs that involve an external entity acting upon a figure. They are rather neutral in the sense that they do not denote any manner nor path. These verbs include for example *nemen* [take] and *geven* [give].

Just as it seems challenging for learners to use manner-path verbs with a prefix when describing self-propelled motion events, they also tend to avoid or are simply not aware of the existence of manner-path-cause verbs with a prefix. Learners tend to use simple verbs to express complex events. In fact, Figure 5.4.2 shows that CLIL2a used five different cause verbs (e.g., *pakken* [take]), one manner-cause verb (i.e., *gooien* [throw]), one manner-path-cause verb [*trekken* [pull]], one path-cause verb (i.e., *brenge* [bring]) and two path-cause verbs with a prefix (i.e., *terugnemen* [take back] and *terugbrengen* [bring back]). CLIL2c used four different cause verbs (e.g., *nemen* [take]), five manner-cause verbs (e.g., *sjotten* [kick]), three manner-path-cause verbs (e.g., *trekken* [pull]), two manner-path-cause verbs with a prefix (e.g., *wegtrekken* [pull away]), one path-cause verb (*brenge* [bring]) and one path-cause verb with a prefix (*terugbrengen* [bring back]). We see a slight evolution between 2021 as they use a higher number of different verbs, but this number is still limited compared to that of L1 Dutch speakers.

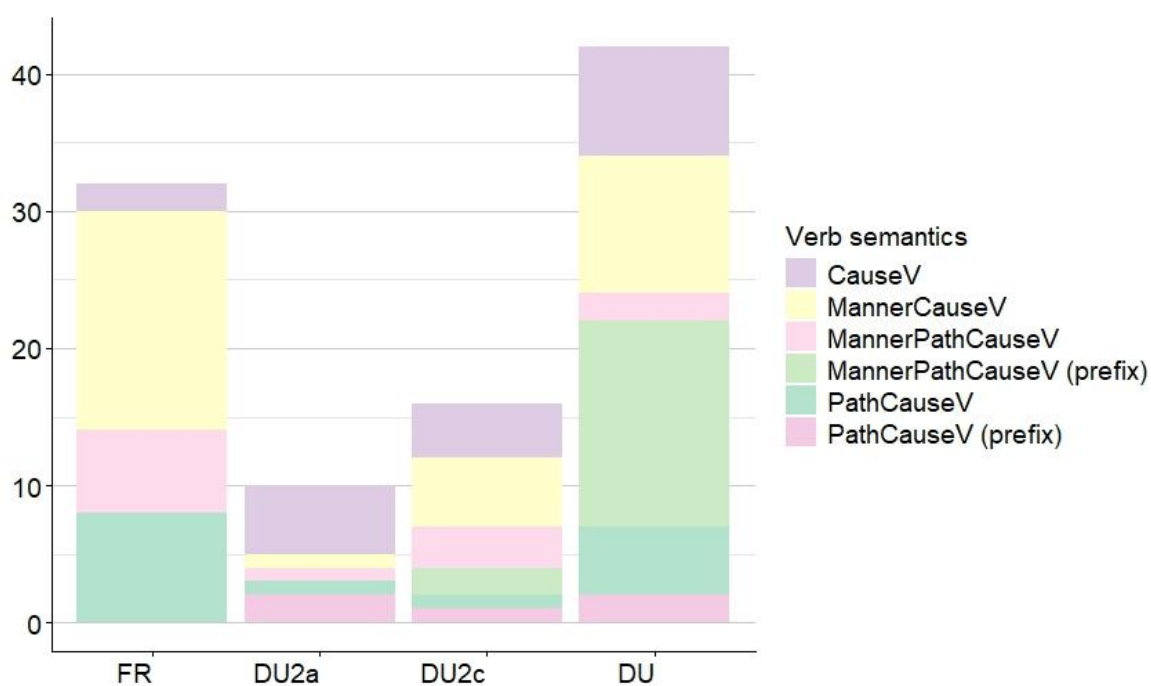


Figure 5.4.2: : Number of different verbs across the four groups (ICME)

L1 Dutch participants used eight cause verbs (e.g. *geven*, *pakken*), ten manner-cause verbs (e.g., *slepen* [drag], *schoppen* [kick]), two manner-path-cause verbs (i.e. *trekken* [pull] and *duwen* [push]), 15 manner-path-cause verbs with a prefix (e.g., *weggooien* [throw away], *ingooien* [throw into]), five path-cause verbs (e.g., *brenge*) and two path-cause verbs with a prefix (e.g., *meenemen* [take with]). The main difference here resides

in the use of manner-path-cause verbs with a prefix. These verbs are underused in L2 Dutch. Lastly, L1 French participants used two cause verbs, 16 manner-cause verbs (or verbal constructions, e.g., *lancer*, *balancer* [throw]), six manner-path-cause verbs (e.g., *tirer*, [pull]), and eight path-cause verbs (e.g., *faire sortir* [take out]).

5.4.2. Overall speech picture

Figure 5.4.3 illustrates the distribution of semantic components in the verb and satellites across the four groups.

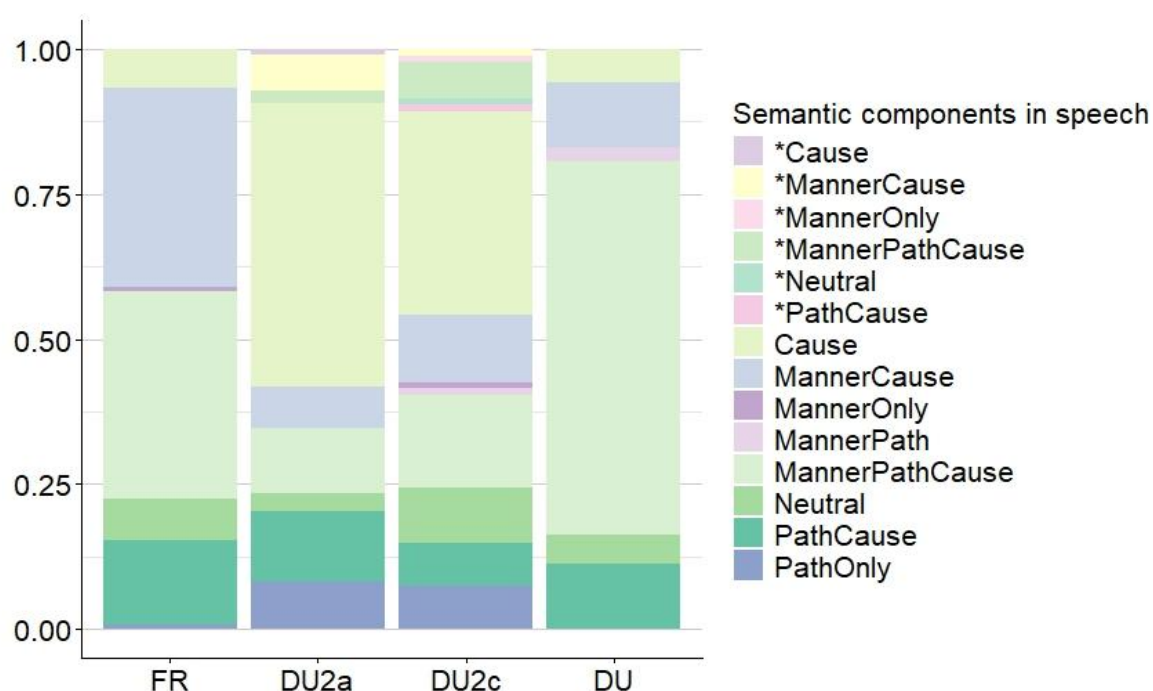


Figure 5.4.3: Semantic components encoded in speech across the four groups (ICME)

Manner, path and cause were expressed in 64.52% of utterances in L1 Dutch (see (98), 35.76% of utterances in L1 French, 11.22% of utterances in DU2a and 15.22% in DU2c.

(98) op dat moment gooit het kuikentje of het vogeltje en bananenschil op de grond (DU11, ME108)

[at that moment, the canary or the bird throws a banana peel onto the ground]

(99) et lance la peau de banana (FR1, ME108)

[and throws the banana peel]

Manner and cause were uttered in 34.44% of utterances in French as illustrated in (99), 11.29% in L1 Dutch, 7.14% in DU2a and 11.70% in DU2c. The descriptions featuring path and cause represent 14.57% of utterances in L1 French, 12.24% of utterances in DU2a, 11.29% of utterances in L1 Dutch and 7.45% of utterances in DU2c. In contrast, L2 learners tended to express cause only (see (100)) with a noticeable evolution between 2021 and 2023 (48.98% in DU2a and 35.11% in DU2c). They also expressed only path in 8.16% of cases (DU2a) and 7.45% (DU2c) and attempted to express manner, path and cause (*MannerPathCause) respectively in 2.04% and 6.38% of cases.

(100) Grosminet neem een bot, een boot, één kleine boot (CLIL2a, ME79)
[Sylvester takes a *bot* *a boat *a small boat]

Overall, L1 speakers, and even more L1 Dutch speakers tend to express more semantic components in speech when they describe intentional caused motion events.

5.4.3. Boundary crossing

Figure 5.4.4 illustrated the distribution of boundary crossing intentional caused motion events. “NA” refers to cases where cause verbs like *nemen* [take] or *geven* [give] were used.

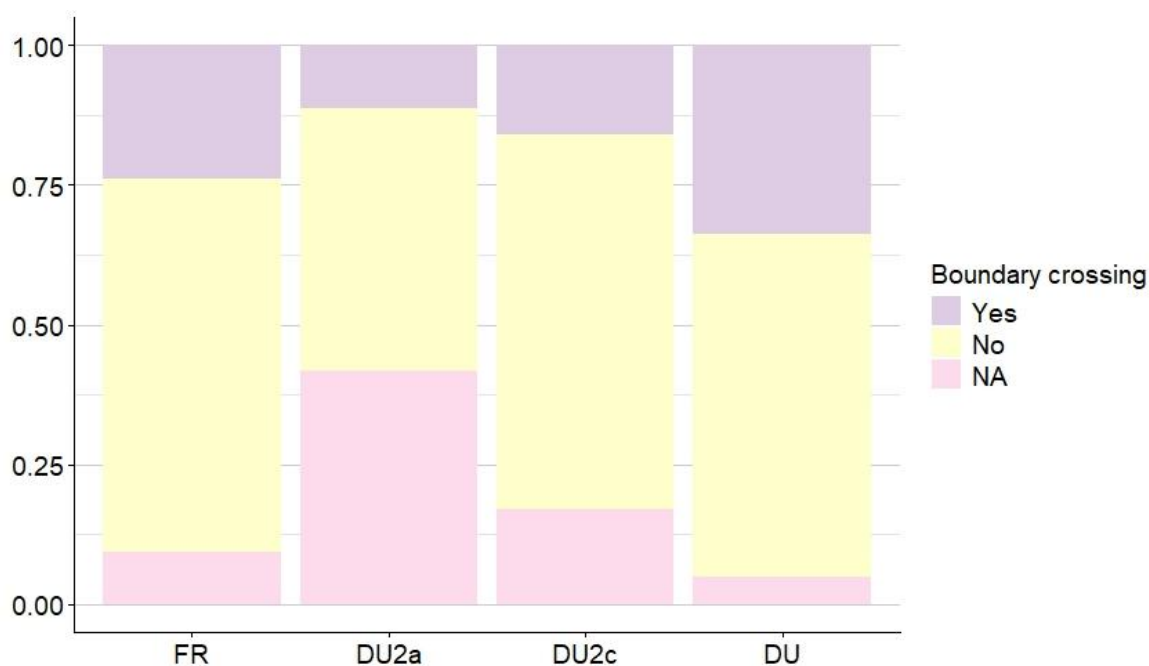


Figure 5.4.4: Boundary crossing intentional caused motion events across the four groups

Intentional caused motion events were boundary crossing in 23.84% of cases in French, 11.22% in DU2a, 15.96% in DU2c and 32.56% in L1 Dutch as illustrated in (97). In addition, they were not boundary crossing in 66.23% of cases in French (like (94) and (99)), 45.92% of cases in DU2a, 67.02% in DU2c and 58.14% in L1 Dutch (cf. (98)). In this case, as opposed to the context of self-propelled motion events, learners express less often boundary crossing events than L1 speakers, which can be explained by the fact that they often expressed cause only.

If we now have a look at the verb types used with boundary crossing events (see Figure 5.4.5), we notice that in French, intentional caused boundary crossing events feature a manner-cause verb in 38.89% of the cases as illustrated in (101), a path-cause verb in 27.78%, a manner-path-cause verb in 19.44%, a cause verb in 11.11% and a path-verb in 2.78%.

(101) il l'a relancé en dehors de l'enclos (FR7, ME23)
[he threw him again out of the pen]



Figure 5.4.5: Boundary crossing intentional caused motion events per verb type across the four groups

In DU2a, boundary crossing events contain a verb conveying manner and cause in 45.45% of cases as in (102), cause in 18.18% of cases and no verbs in 36.36% of cases.

In DU2c, intentional caused boundary crossing events have a cause verb in 26.67% of cases, a manner-cause verb in 20%, a *manner-cause verb and a manner-path-cause verb with a prefix each in 13.33%. In addition, intentional caused boundary crossing events are expressed by CLILc participants with manner-path-cause verbs, no verbs, path verbs and path-cause verbs with a prefix, all in 6.67%.

(102) en de leeuw gooit <> de Grosminet in de enclos van de beer (CLIL3a, ME100) [and the lion throws Sylvester into the bear enclos]

Lastly, in L1 Dutch, manner-cause verbs occur in utterances describing boundary crossing events in 35.71% (cf. (103)), manner-path-cause verbs with a prefix in 27.19%, manner-path-cause verbs and path-cause verbs each in 9.72% and manner-path verbs with a prefix, path-cause with a prefix and no verbs each in 2.38% of cases.

(103) en die gooit dat zonder te kijken over zijn rug in dat reservaat (DU14, ME36) [and he throws it over his shoulder into that reserve without even looking]

Both L1 French speakers and L1 Dutch speakers tend to express boundary crossing events with manner-cause verbs, but they also differ from one another in that L1 Dutch speakers tend to do so using manner-path-cause verbs with a prefix while L1 French speakers do so with path-cause verbs. L2 learners also use manner verbs in boundary crossing (and more often in 2021) but otherwise, they mostly express such events with a cause verb or no verb.

5.4.4. Density in speech with and without referential gestures

Figure 5.4.6 presents the semantic components in speech in utterances that are accompanied by gestures compared to those which are uttered without gestures.

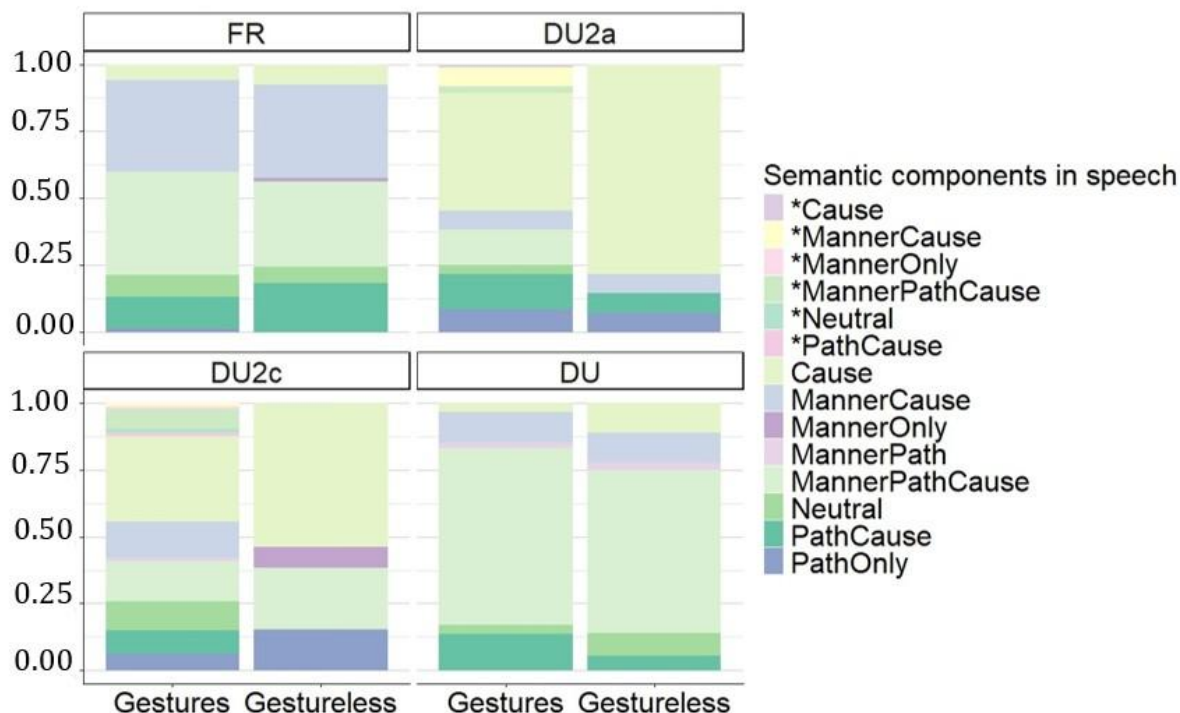


Figure 5.4.6: Density of semantic components in speech in relation to the presence or absence of referential gestures (ICME)

In L1 French, 56.29% of utterances co-occurred with gestures. The utterances without gestures convey manner and cause in 34.85% of cases, manner, path and cause in 31.82% of cases, path and cause in 18.18%, only cause in 7.58%, none of these semantic components in 6.06% and only manner in 1.51%. When participants make referential gestures with their utterances, 38.82% of them convey manner, path and cause, 34.12% manner and cause, 11.76% path-cause, 8.24% none of these semantic components, 5.88% only path and 1.18% only manner.

In DU2a, 85.71% of utterances were accompanied by gestures. Gestureless utterances convey only cause in 78.58%, manner and cause, path and cause and only path each in 7.14% of cases. Utterances with co-occurring gestures convey only cause in 44.05%, manner, path and cause in 13.10%, path and cause in 13.10%, 8.33% only path, manner and cause and *manner-cause each in 7.14%.

In DU2c, 86.17% of utterances co-occurred with gestures. Gestureless utterances express cause in 53.85% of cases, 23.08% manner, path and cause, 15.38% only path and 7.69% only manner. On the other hand, the utterances featuring gestures convey cause in 32.10% of cases, manner, path and cause in 14.81%, 13.58% manner and cause, none

of these semantic components in 11.11%, path and cause in 8.64% and *manner, path and cause in 7.41%.

In L1 Dutch, 70.97% of utterances co-occurred with gestures. Participants expressed manner, path and cause in 61.11% of gestureless utterances, cause in 11.11%, manner and cause in 11.11%, none of these components in 8.33% and path and cause in 5.55%. When they produced gestures, their utterances conveyed manner, path and cause in 65.91% of cases, path and cause in 13.63% of cases, and manner and cause in 11.36%.

Overall, the absence or presence of gestures does not seem to affect the distribution of semantic components of any groups.

5.4.5. Zoom in on CLIL learners

Figure 5.4.7 displays the semantic components encoded in the verbs used by CLIL learners in 2021 and 2023 to describe intentional caused motion events.

Five learners uttered fewer descriptions in 2021 and 2023, two the same number and five more.



Figure 5.4.7: Semantic components in verbs across CLIL learners in 2021 and 2023
(ICME)

Instead of using cause verbs as in 2021, CLIL2 used a wider variety of verbs (one manner-cause, one manner-path-cause with a prefix, path verbs and a path-cause verb). CLIL3 used more cause and manner-cause verbs in 2023 than in 2021 while CLIL7 reduced her number of cause verbs and used more manner-path-cause verbs in 2023. Manner-path cause verbs were also found in the data of CLIL13 in 2021 and one was found in CLIL14's data in 2021. Cause verbs remain the most frequent verb type used by most learners. Still, CLIL1, CLIL7 and CLIL14 in 2023 tend to stand out from the others.

The numbers of different verbs used by each CLIL learner in 2021 and 2023 to describe intentional caused motion events can be seen in Figure 5.4.8.

Only CLIL7 used a path-cause verb with a prefix and only CLIL2 (in 2023), CLIL3 (in 2023) and CLIL7 (in 2023) used a manner-path-cause verb with a prefix.

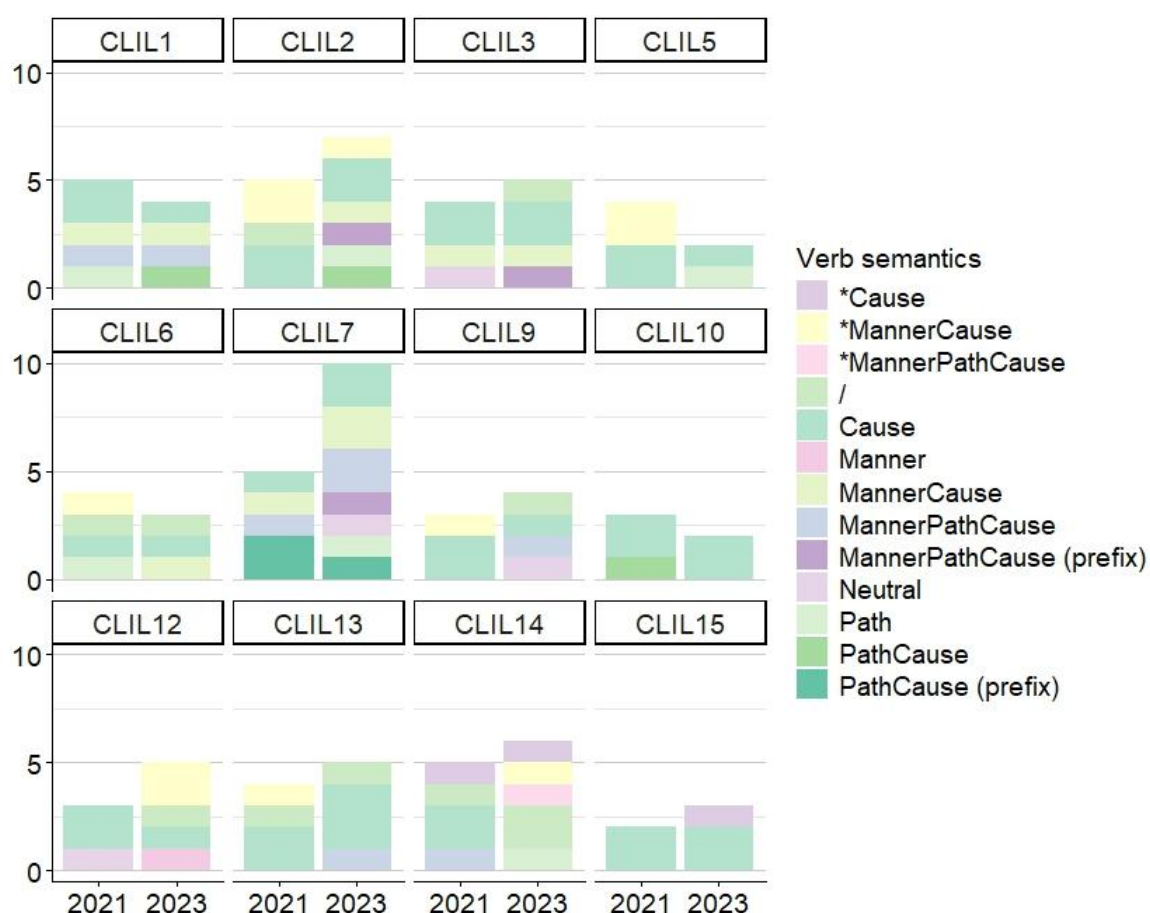


Figure 5.4.8: Number of different verbs used by CLIL learners in 2021 and 2023 (ICME)

As can be seen in Figure 5.4.9, there is a lot of individual variation in the semantic components CLIL learners encoded in speech in 2021 and 2023 to describe intentional caused motion events.

CLIL3 and CLIL7 conveyed manner, path and cause more in 2023 than in 2021 and CLIL2, CLIL7, and CLIL12 conveyed only cause more in 2021 than in 2023.

CLIL2, CLIL5 and CLIL7 conveyed only path more in 2023 than in 2021. In contrast, CLIL1, CLIL6, CLIL13 and CLIL14 did it less in 2023 than in 2021.

Overall, both manner and cause or both path and cause were not conveyed often. CLIL1 is the one who encoded manner and cause in speech the most. CLIL2, CLIL6, CLIL12 and CLIL13 encoded manner and cause more in 2023 than in 2021 and CLIL2 encoded path and cause more in 2023 than in 2021.

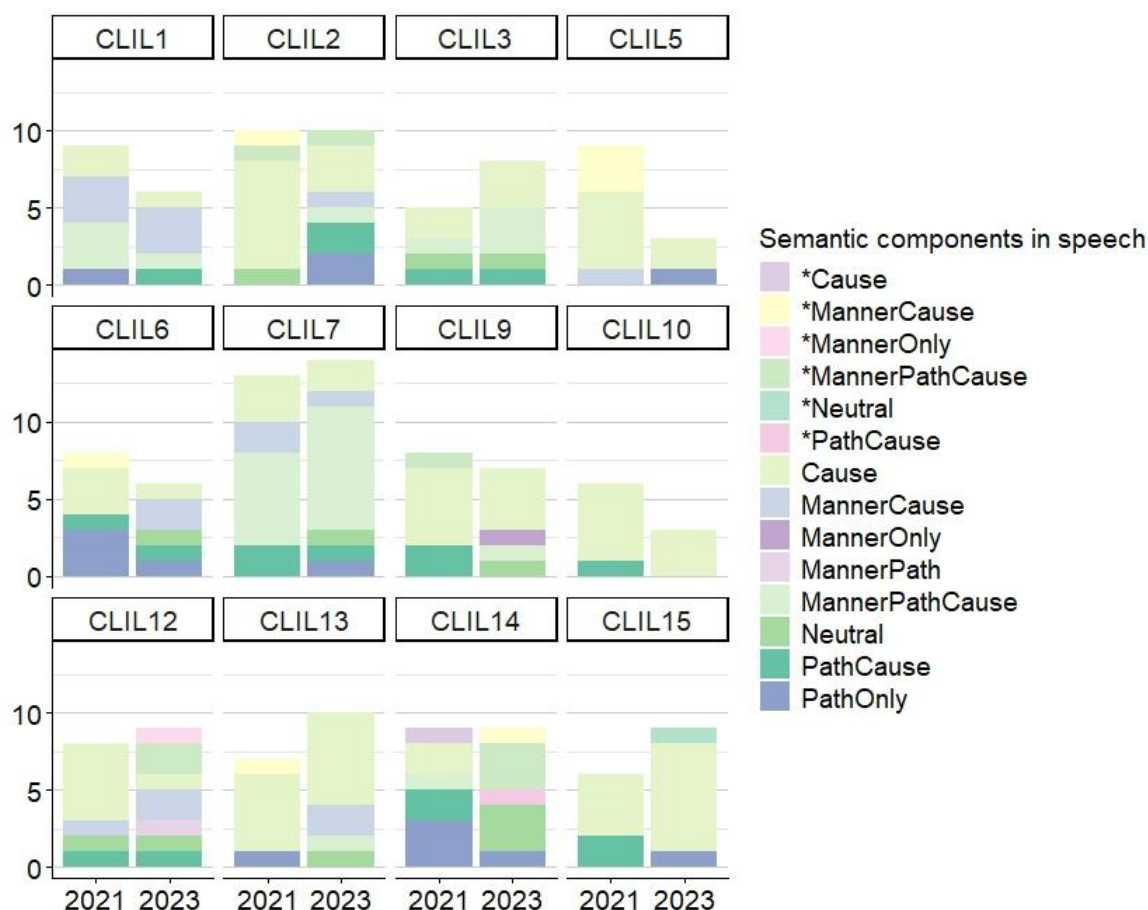


Figure 5.4.9: Semantic components encoded in speech across CLIL learners in 2021 and 2023 (ICME)

5.4.6. Conclusion

In expressing intentional caused motion events, L1 French speakers typically encode manner and cause within the verb, followed by cause, and manner, path, and cause. L1 Dutch speakers, on the other hand, tend to use manner-cause verbs followed by manner-path-cause verbs with a prefix, cause verbs, and manner-path-cause verbs. In contrast, L2 learners predominantly use cause verbs, with some also using manner and cause verbs. Additionally, they attempt to use other types of verbs, either by using an incorrect form or by using verbs from another language. Similar to the context of self-propelled motion events, a wide range of verbs is observed in Dutch and French, whereas learners use relatively few verbs. Indeed, most learners used fewer than five correct verbs in both 2021 and 2023. While native Dutch speakers frequently use manner-path-cause verbs with a prefix, learners tend to use cause verbs and manner-cause verbs.

The expression of manner, path, and cause occurs more frequently in Dutch than in French, and more so than in DU2c and than in DU2a. It appears that learners find it challenging to encode multiple semantic components within a single utterance. Instead, they tend to encode only cause, path and cause, manner and cause, or even solely path.

Boundary crossing events were more frequently expressed in Dutch than in French, followed by DU2c and DU2a, although the differences are relatively minor. Notably, the types of verbs associated with these events are of interest. In L1 Dutch, these events are predominantly expressed using manner-cause verbs and manner-path-cause verbs with a prefix. In French, boundary crossing events primarily involve manner-cause verbs, path-cause verbs, and manner-path-cause verbs. In contrast, CLILa participants expressed these events using manner-cause verbs, no verbs, and cause verbs. Finally, CLILc participants predominantly used cause verbs and manner-cause verbs in their descriptions of boundary crossing events.

Similarly to the results found in the context of self-propelled motion events, the distributions of semantic components in the utterances with and without gestures are similar to one another.

5.5. Unintentional caused motion events

This section looks at the semantic components encoded in verbs that describe unintentional caused motion events (Section 5.5.1), the semantic components present in entire utterances (Section 5.5.2), the criterion of boundary crossing or non-crossing (Section 5.5.3), and the density of semantic components with and without referential gestures (Section 5.5.4). Lastly, Section 5.5.5 zooms in on CLIL learners and Section 5.5.6 gives some concluding remarks.

5.5.1. Verb semantics

Figure 5.5.1 presents the distribution of semantic components in verbs used for the descriptions of unintentional caused motion events across the four groups (FR=98, DU2a=43, DU2c=55, DU=63).

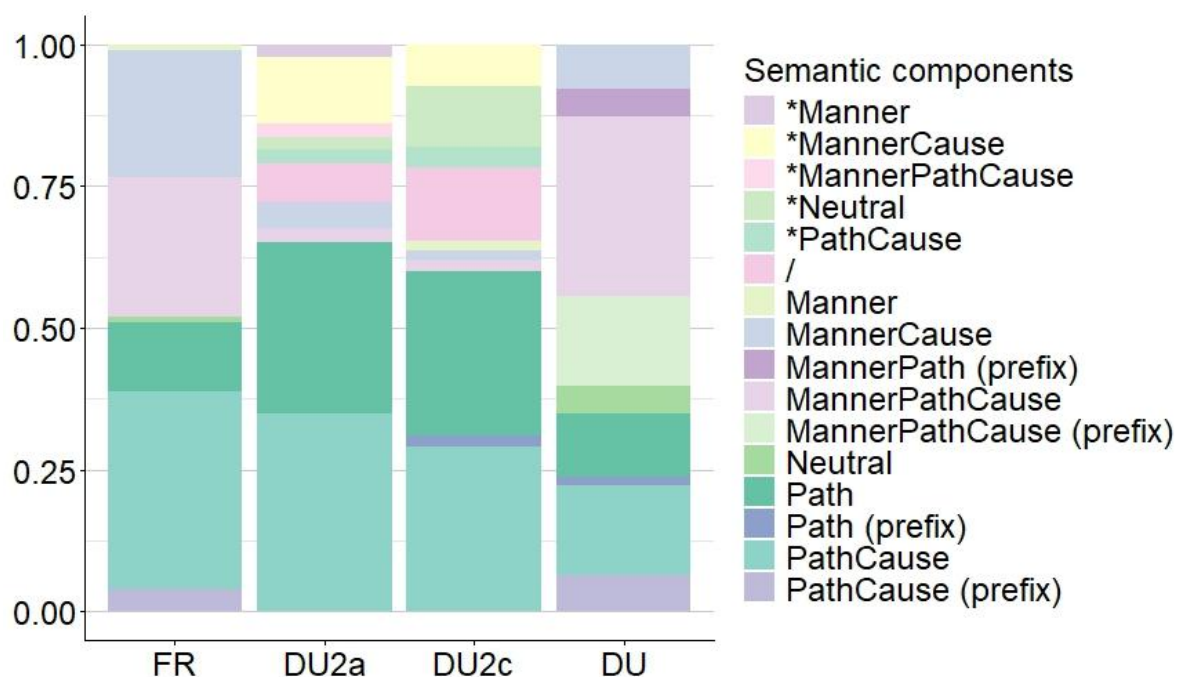


Figure 5.5.1: Semantic components in verbs across the four groups (UCME)

In L1 French, participants used a path-cause verb in 34.69% of cases as illustrated in (104), a manner-path-cause verb in 24.49%, a manner-cause verb in 22.45%, a path verb in 12.24% (e.g., *arriver*) and a path-cause verb with a prefix in 4.08% of cases.

(104) et <> il va atterrir je crois que c'est dans<> l'enclos des *des ours (FR13, ME103)

[and he's going to land I believe it is <> in the bear pit]

In DU2a, participants used path-cause verbs in 34.88% of cases (e.g., *vallen* [fall] in (105), path verbs in 30.23% (e.g., *gaan* [go]), *manner-cause verbs in 11.63%, no verbs in 6.98%, manner-path-cause verbs (*zinken* [sink]) and manner-cause verbs each in 4.65% and neutral verbs and *path-cause verbs each in 2.33% of cases.

(105) Grosminet/ val in <> de rivier (CLIL10a, ME110)

[Sylvester fall into <> the river]

In DU2c, participants uttered path-cause verbs (e.g., *vallen* [fall]) and path-only verbs (e.g., *gaan* [go]) each in 29.09% of cases. The use of path-only verbs is more frequent in L2 speech than in L1 speech. It seems to be a good alternative for learners to express the event without the unintentionality and the cause when they do not know how to do so

as illustrated in (106) where the participant describes the boat and the lion sinking with the path-verb *gaan* [go].

(106) dus de boot/ gaat onder het water hele * heel / traag onder het water
(CLIL6c, ME86)

[so the boat / goes under water very *very / slowly under the water]

In addition, CLILc used no verbs in 12.73% of cases, *neutral verbs and *manner-cause verbs each in 7.27% of cases.

Lastly, in L1 Dutch, the descriptions of unintentional caused motion events feature a manner-path-cause verbs in 31.75% of cases (see (107)), a path-cause verb in 15.87%, a manner-path-cause verb with a prefix in 15.87%, a path verb in 11.11%, a manner-cause verb in 7.94% of cases, and a path-cause verb with a prefix in 6.35% of cases.

(107) en de leeuw die zinkt met de boot in het water (DU10, ME86)

[and the lion sinks with the boat into the water]

The distribution of verb types is significantly different between L1 French and L1 Dutch ($\chi^2=35.545172$, p-value= $4.773143e-05$), L1 French and DU2a ($\chi^2=49.278027$, p-value= $1.870028e-06$), L1 French and DU2c ($\chi^2=65.471775$, p-value= $8.783998e-10$), L1 Dutch and DU2a ($\chi^2=52.366858$, p-value= $2.437033e-06$), L1 Dutch and DU2c ($\chi^2=64.517672$, p-value= $8.065535e-09$) and not significant between DU2a and DU2c ($\chi^2=8.956716$, p-value= $6.258877e-01$).

If we have a look at the verb range of each group, we see that learners used very few different verbs in comparison with L1 speakers and even fewer in comparison to L1 Dutch speakers. In fact, learners used other types of verbs such as path or manner verbs, verbs from other languages, wrong forms of Dutch verbs as shown in Figure 5.5.1 or several times the same few verbs (*vallen* [fall], *glijden* [glide] and *zinken* [sink] as illustrated in Figure 5.5.2.

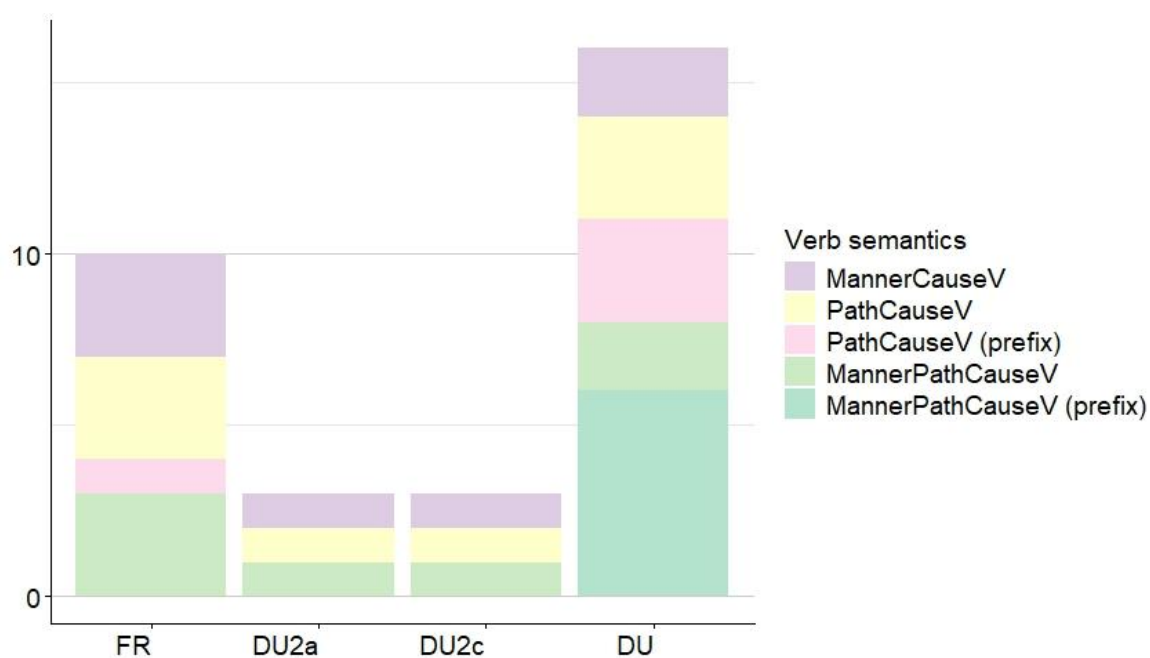


Figure 5.5.2: Number of different verbs in the descriptions of unintentional caused motion events

In French, we find three different manner-cause verbs (e.g., *glisser* [slide]), three path-cause verbs (e.g. *tomber* [fall]), one path-cause verb with a prefix (i.e., *s'enfoncer* [to go into the depths]) and three manner-path-cause verbs (e.g., *couler* [sink]).

Lastly, in the Dutch data, there are two manner-cause verbs (e.g., *schuiven* [slide]), three path-cause verbs (e.g., *landen* [land]), three path-cause verbs with a prefix (e.g., *inzakken* [cave in]), two manner-path-cause verbs (e.g., *zinken* [sink]) and six manner-path-cause verbs with a prefix (e.g., *uitglijden* [slide from its place]).

5.5.2. Overall speech picture

Figure 5.5.3 illustrates the distribution of semantic components in speech across the four groups.

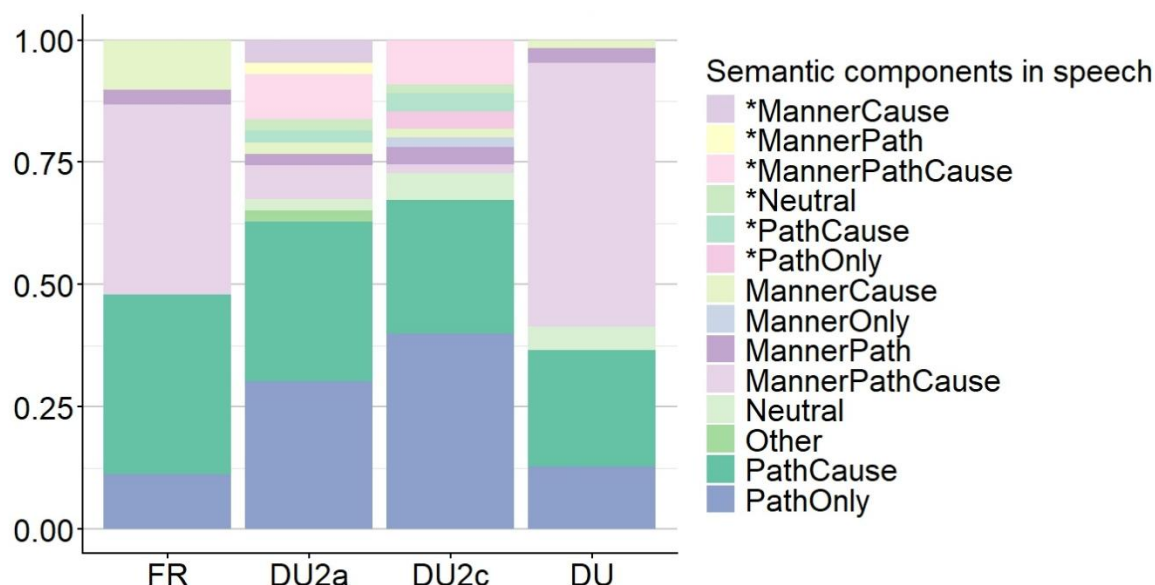


Figure 5.5.3: Semantic components encoded in speech across the four groups (UCME)

French participants encoded manner, path and cause in 38.78% of their utterances as illustrated in (108) where the verb *glisser* expresses manner and cause and *dedans* path. In addition, they described path and cause in 36.73%, only path in 11.22% and manner and cause in 10.20%.

(108) et en fait il glisse dedans (FR5, ME102)
[and in fact he slides into it]

CLILa participants encoded path and cause in 32.56% of cases as in (105), only path in 30.23%, *manner, path and cause in 9.30%, manner, path and cause in 6.98% and manner and cause in 4.65%.

CLILc participants encoded only path in 40%, path (cf. (109)) and cause in 27.27% and *manner, path and cause in 9.09%. In addition, they also encoded *path and cause and manner and path each in 3.64%.

(109) maar <> hij <> *hij komt in de rivier met de alligatoren (CLIL5c, ME110)
[but <> he <> *he comes into the river with the alligators]

Lastly, L1 Dutch participants encoded manner, path and cause in 53.97% of cases (see (107)), path and cause in 23.81% and only path in 12.70%.

5.5.3. Boundary crossing

In Figure 5.5.4, we can see that unintentional caused motion events are boundary crossing in 57.14% of cases in L1 French (cf. (108)), 67.44% in DU2a as illustrated in (110), 78.18% in DU2c and 71.43% in L1 Dutch as in (107).

(110) en de lion gaat in water met de boot (CLIL6a, ME86)
[and the lion goes into the water with the boat]

Contrary to the contexts of self-propelled motion events and intentional caused motion events, learners express more often boundary crossing events than L1 French speakers and CLILc even more often than L1 Dutch speakers.

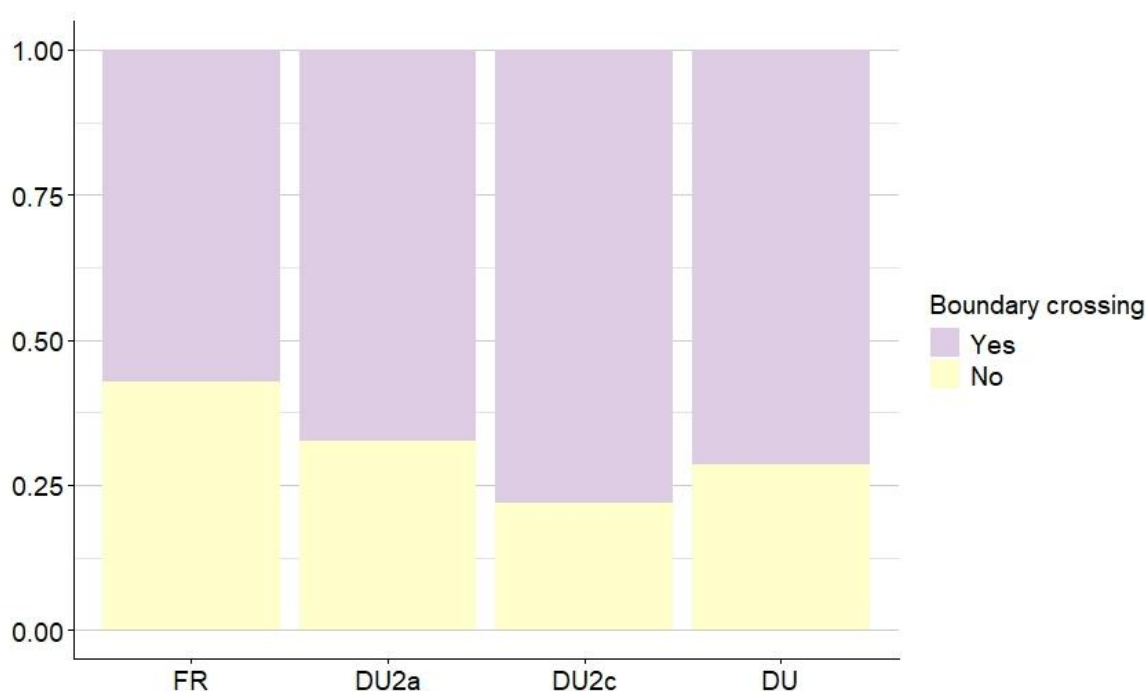


Figure 5.5.4: Boundary crossing unintentional caused motion events across the four groups

If we have a closer look at the boundary crossing unintentional caused motion events per verb type, we see that in French, 48.21% of them feature a path-cause verb, 21.43% a manner-path-cause verb, 14.29% a path-verb, 8.93% a manner-cause verb, 5.36% a path-cause verb with a prefix and 1.79% a neutral verb.

In DU2a, 48.28% of utterances describing a boundary crossing event contain a path-cause verb, 34.48% a path-verb and 3.45% a manner-path-cause verb, a *manner-path-cause verb, no verb and a *manner-cause verb.

In DU2c, we observe a similar pattern for path-cause verbs (34.88%) and path verbs (30.23%) as in DU2a. In addition, boundary crossing events also feature *neutral verbs in 13.95%.

Lastly, in L1 Dutch, boundary crossing events are expressed with a manner-path-cause verb in 37.78% of cases, with a path-cause verb in 20%, with manner-path-cause verbs with a prefix in 13.33%, and with a path, manner-cause and path-cause verb with a prefix, each in 6.67%.

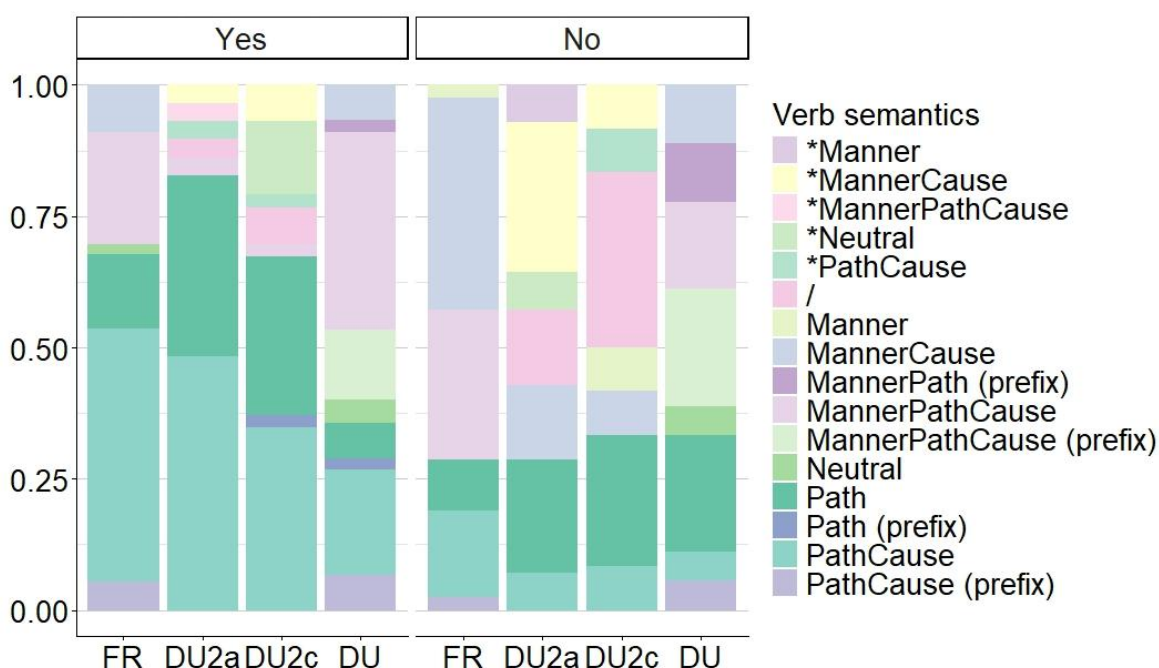


Figure 5.5.5: Boundary crossing unintentional caused motion events per verb type across the four groups

5.5.4. Density in speech with and without referential gestures

Figure 5.5.6 displays the distribution of semantic components in speech per group when utterances are accompanied by referential gestures and when they are not.

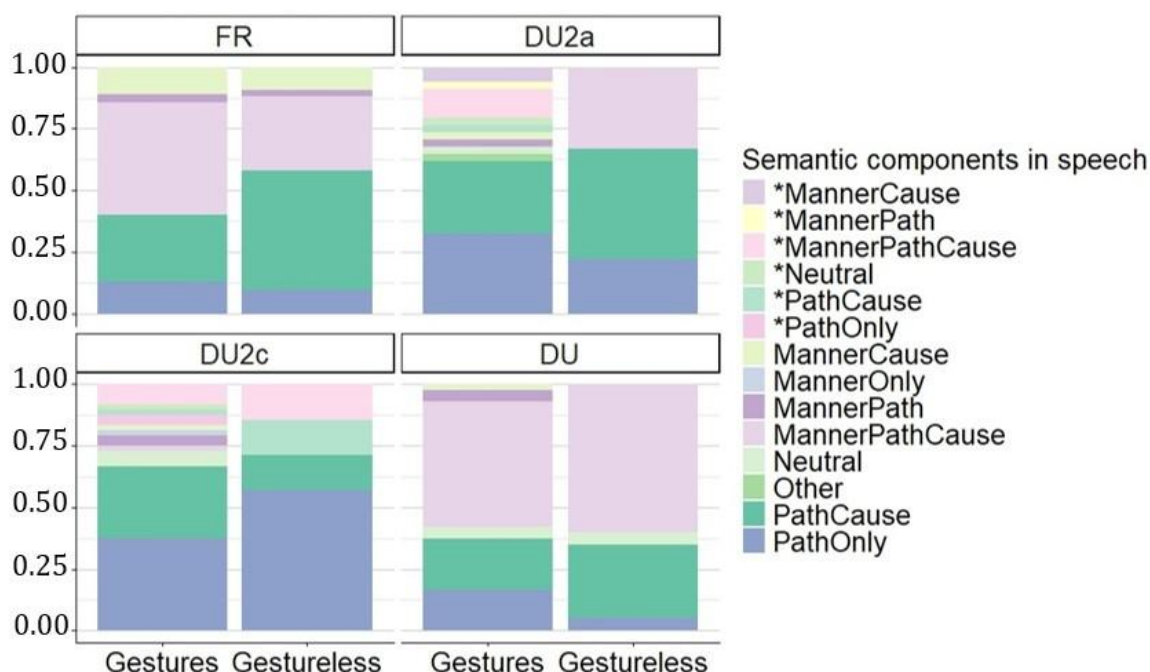


Figure 5.5.6: Density of semantic components in speech in relation to the presence or absence of referential gestures (UCME)

In L1 French, 56.12% of utterances describing unintentional caused motion events co-occurred with gestures. Among the utterances featuring gestures, 45.46% convey manner, path and cause, 27.27% path and cause, 12.72% only path, 10.91% manner and cause and 3.64% manner and path. In contrast, gestureless utterances convey path and cause in 48.84%, manner, path and cause in 30.23%, manner and cause and only path each in 9.30% and manner and path in 2.33%. Utterances featuring gestures are thus more often semantically richer than utterances with no gestures.

In DU2a, 79.07% of utterances describing unintentional caused motion events co-occurred with gestures. Among the utterances featuring gestures, 32.35% convey only path and 29.41% path and cause. In addition, other combinations such as manner-cause, neutral, manner-path, etc. occur each in 2.94% of cases. In contrast, gestureless utterances convey path and cause in 44.44% of cases (but only four occurrences), manner, path and cause in 33.33% of cases and only path in 22.22%.

In DU2c, 82.27% of utterances expressing unintentional caused motion events features referential gestures. Among the utterances featuring gestures, 37.5% convey only path, 29.17% path and cause, 8.33% *manner, path and cause and 6.25% none of these

semantic components. 57.14% of gestureless utterances convey only path whereas 14.28% convey path and cause and 14.28% none of these semantic components.

Lastly, in L1 Dutch, 68.25% of utterances co-occurred with gestures. Among these utterances, 51.16% of them convey manner, path and cause, 20.93% path and cause and 16.28% only path. In addition, 4.65% convey manner and path, 4.65% none of these semantic components and 2.33% manner and cause.

Overall, the presence or absence of gesture does not influence the distribution of semantic components in speech. It could be the case for the CLILa group but there are too few utterances in the gestureless category to affirm this.

5.5.5. Zoom in on CLIL learners

Figure 5.6.1 displays the semantic components CLIL learners encoded in verbs in 2021 and 2023 to describe unintentional caused motion events.



Figure 5.5.7: Semantic components in verbs per CLIL learner in 2021 and 2023 (UCME)

Only a few learners tended to encode cause together with path and or manner. CLIL1, CLIL2, CLIL7 and CLIL10 encoded path and cause in the verbs several times each and CLIL7 and CLIL10 did so more in 2023 than in 2021. Besides, learners used a lot of path verbs to describe these events and sometimes attempted to use verbs in which cause is conveyed with another semantic component.

Figure 5.5.8 presents the number of different verbs used by CLIL learners in 2021 and 2023 to describe unintentional caused motion events. None of them used more than three correct verbs. Eight of them one path-cause verb in 2021 and seven in 2023. Two of them used one manner-path-cause verb: CLIL1 in 2021 and CLIL9 in 2023. In addition, three of them used a manner-cause verb: CLIL3 and CLIL5 in 2021 and CLIL1 in 2023. Lastly, they either used manner or path verbs that did not convey cause or attempted to use verbs conveying cause together with another component or one component only.

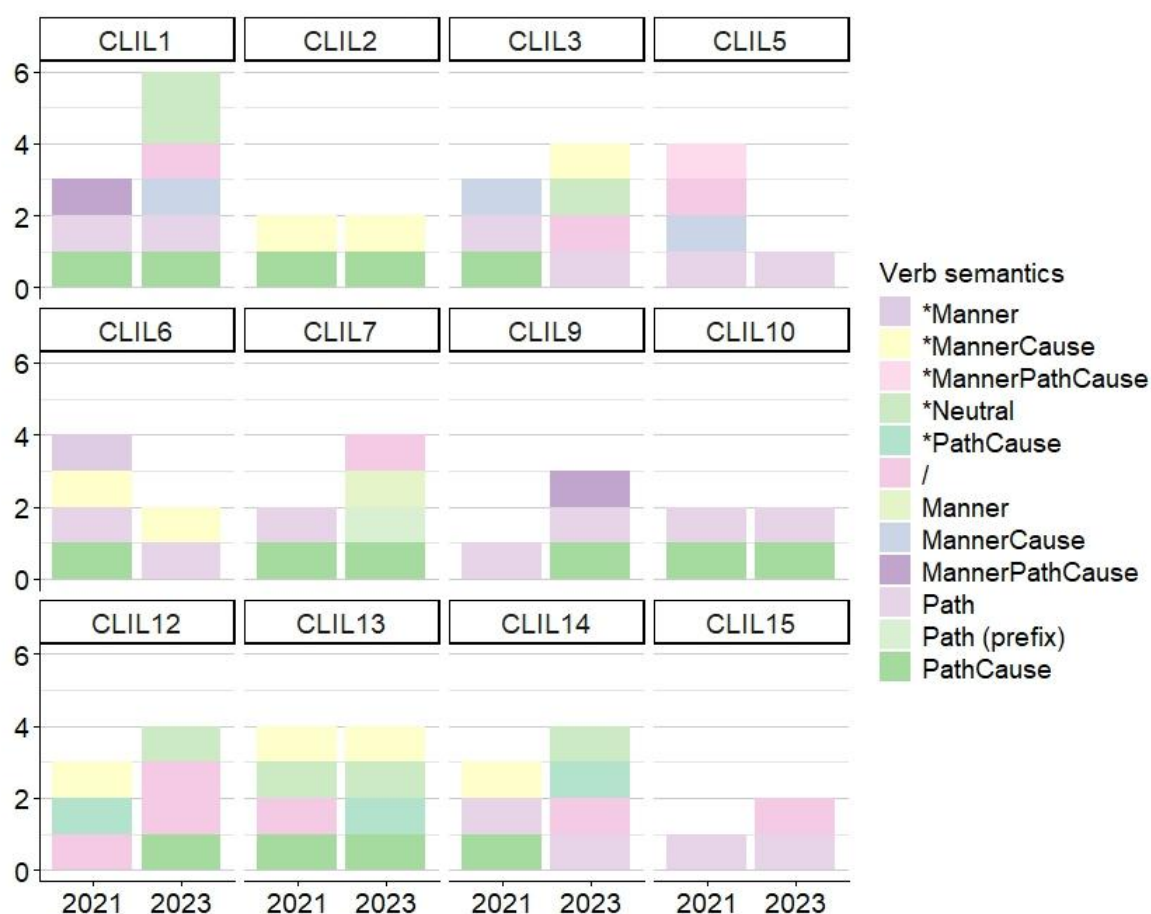


Figure 5.5.8: Number of different verbs used by CLIL learners in 2021 and 2023 (UCME)

Figure 5.5.9 illustrates the semantic components CLIL learners encoded in speech in 2021 and 2023 to describe unintentional caused motion events.

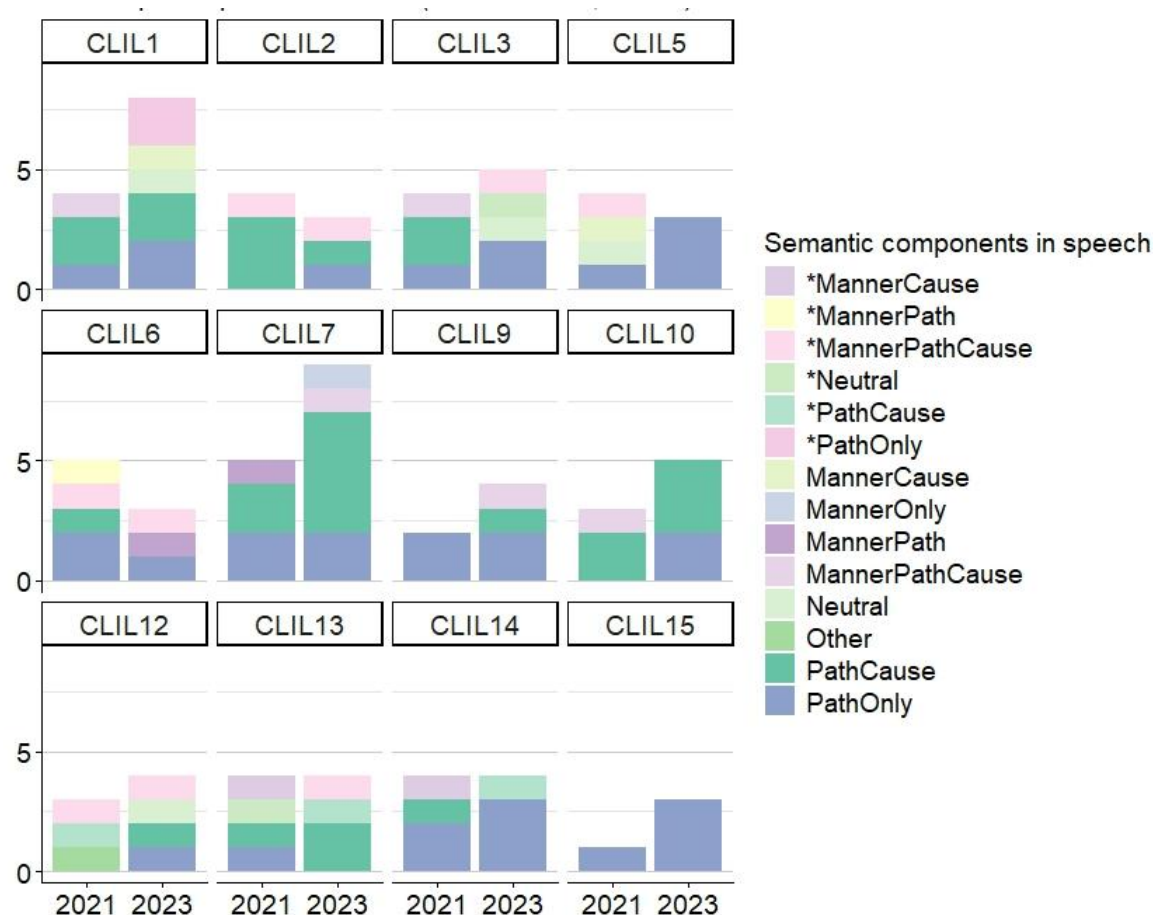


Figure 5.5.9: Semantic components encoded in speech across CLIL learners in 2021 and 2023 (UCME)

Few occurrences feature manner, path and cause: only CLIL1, CLIL3, CLIL9 and CLIL10 encoded the three components in 2021 and CLIL14 in 2023. Six learners expressed only path more in 2023 than in 2021 while only two expressed path and cause more in 2023 than in 2021. Few learners expressed manner and cause: one in 2021 and two in 2023.

It can be concluded that there is not much evolution between 2021 and 2023 regarding the semantic components encoded in verbs and more generally in speech to describe unintentional caused motion events.

5.5.6. Conclusion

In the context of intentional caused motion events, manner-path-cause verbs are used more frequently in L1 Dutch than in French, and more so than in L2 Dutch. L1 French speakers predominantly use path-cause verbs, a tendency also observed among L2 learners. Manner-cause verbs are more commonly used in French than in Dutch, and

even less so in L2 Dutch. Furthermore, L2 learners often resort to verbs that solely encode path to describe such events, whereas L1 Dutch speakers use a variety of verbs that encode manner and cause in the root and path in the prefix. These complex verbs appear to be unfamiliar or challenging for learners. Indeed, learners persist in using a limited set of verbs to describe different motion events, with only a minority using verbs that integrate cause with other semantic components.

It appears to be challenging for learners to simultaneously encode manner, path, and cause within a single utterance, as only a minority manage to do so, and not in a systematic manner. L1 Dutch speakers are the most frequent in encoding all three components. In contrast, L2 learners typically encode either path and cause or path alone.

L1 French speakers are the ones encoding boundary crossing events the most frequently, followed by CLILa participants, L1 Dutch participants and CLILc participants. typically use path-cause verbs, with learners also utilizing path verbs, whereas L1 Dutch speakers predominantly use manner-path-cause verbs to express these events.

Finally, consistent with the findings from self-propelled motion events and intentional caused motion events, the density analysis did not indicate any differences in the semantic richness of utterances, regardless of the presence or absence of gestures.

5.6. Caused location events

This section will examine the semantic components encoded in verbs that describe caused location events (Section 5.6.1), the semantic components present in entire utterances (Section 5.6.2), the boundary crossing criterion (Section 5.6.3) and the density of semantic components with and without referential gestures (Section 5.6.4). Because of the sample size, no statistical tests were performed for this type of event. Lastly, Section 5.6.5 zooms in on CLIL learners and Section 5.6.6 summarizes the main results.

5.6.1. Verb semantics

Figure 5.6.1 shows the semantic components encoded in the verbs used in the descriptions of caused location events (FR=23, DU2a=14, DU2c=16, DU=20).

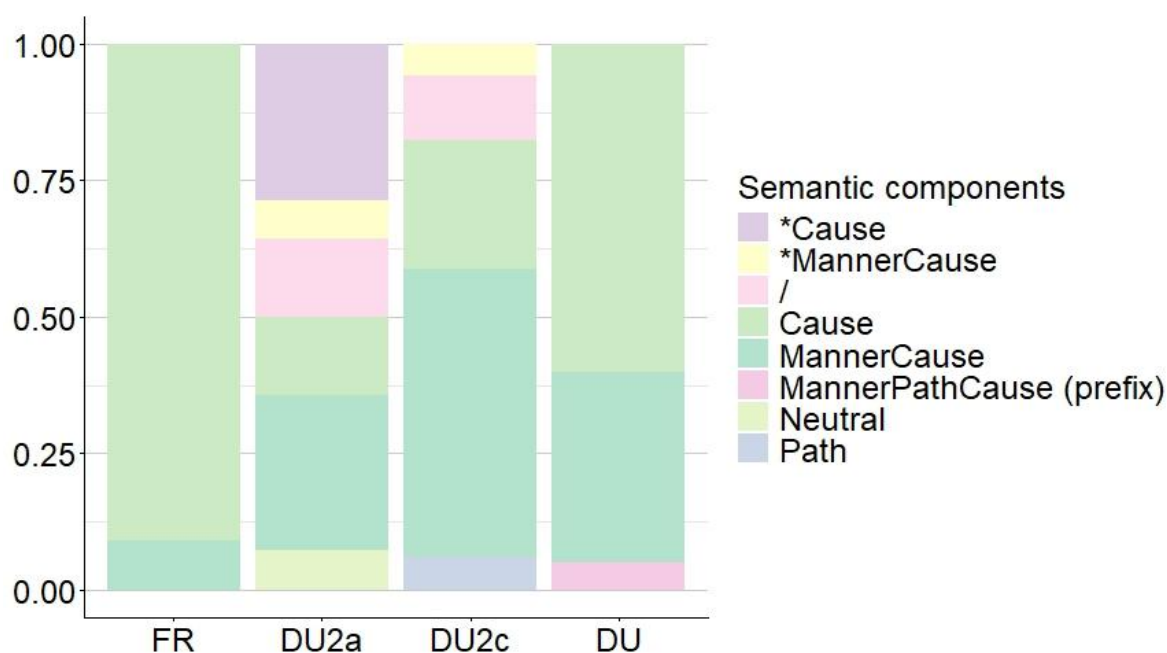


Figure 5.6.1: : Semantic components in verbs across the four groups (CLE)

In L1 French, participants used cause verbs in 90.91% of cases as in (111) and manner-cause verbs in 9.09%.

(111) il met Grosminet dans l'eau (FR11, ME97)

[he puts Sylvester into the water]

In DU2a, participants used manner-cause verbs, *cause verbs each in 28.57% of cases. In addition, they used cause verbs and no verbs each in 14.29% of cases and *manner-cause verbs, neutral verbs and manner verbs each in 7.14%. (112) illustrates the use of a manner-cause verb.

(112) en dus wanneer de kat probeer de *de stuk gebouw in *op de grond te zetten (CLIL7a, Extra)

[and so when the cat try to put the *the piece of *gebouw*³⁰ in *on the ground]

CLILc participants used manner-cause verbs in 50% of cases (see

³⁰ The participant is talking about Sylvester putting the wooden stick on the ground but did not use the right word for wooden.

(113)), cause verbs in 25%, no verbs in 12.50% and *manner cause verbs and path verbs each in 6.25%.

(113) zet Grosminet in de water met de krokodijlen (CLIL3c, ME97)

[puts Sylvester into the water with the crocodiles]

L1 Dutch participants used manner-cause verbs in 35%, cause verbs in 60% as in and manner-path-cause verbs with a prefix in 5%.

(114) laat ie die in die vijver (DU3, ME97)

[and he lets him in the pond]

If we have a look at the verb range used by the different groups of participants to describe caused location events (cf. Figure 5.6.2), we see that two different verbs expressing manner and cause were used in French (*pendre* [hang], *piquer* [sitck]), DU2a (*hangen* [hang], *zetten* [put]) and DU2c (*leggen* [put], *zetten* [put]) and three in L1 Dutch (*stoppen* [put], *steken* [put], *zetten* [put]). Concerning cause verbs, three were identified in L1 French (*mettre* [put], *poser* [put], *tenir* [hold]), two in DU2a (*hebben* [have], *plaatsen* [place]), three in DU2c (*hebben* [have], *nemen* [take], *plaatsen* [place]) and five in L1 Dutch (*hebben*, *houden*, *laten*, *vasthouden*, *vasthebben*). In addition, one verb depicting manner, path and cause was identified in L1 Dutch (*neerzetten* [put down]).

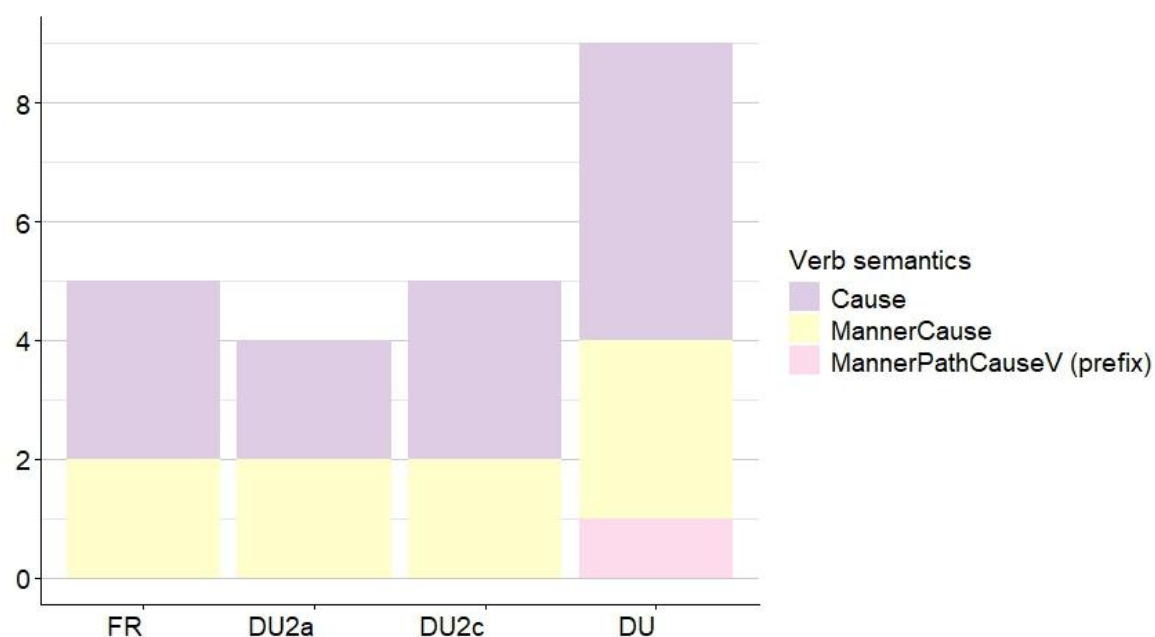


Figure 5.6.2: Number of different verbs in the descriptions of caused location events

5.6.2. Overall speech picture

Figure 5.6.3 presents the semantic components encoded in the utterances describing caused location events.

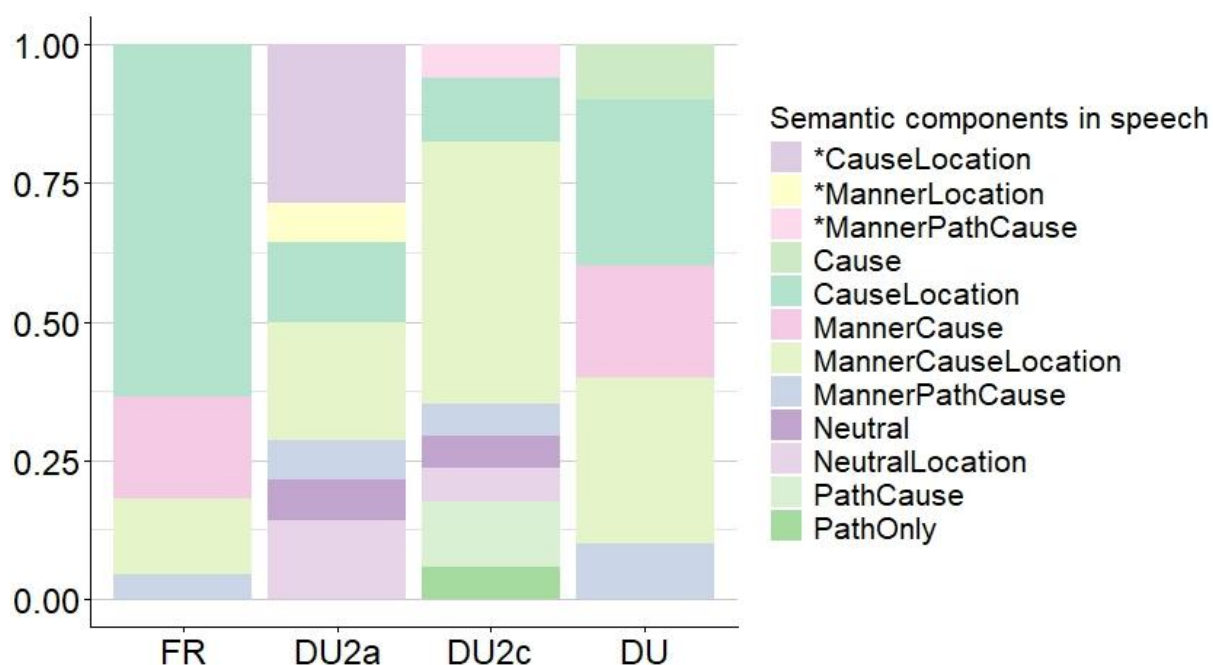


Figure 5.6.3: Semantic components encoded in speech across the four groups (CLE)

In L1 French, cause and location were expressed in 63.64% of cases (cf. (111), manner and cause in 18.18%, manner, cause and location in 13.64% and manner, path and cause in 4.55%.

In DU2a, speech conveyed *cause and location in 28.57%, manner, cause and location in 21.43% as in (112), both neutral and cause location in 14.29%, *manner and location and none of these semantic components each in 7.14%.

In DU2c, participants conveyed manner, cause and location in 43.75% (see (113), and cause and location, and path and cause each in 12.50%. In addition, they expressed manner, path and cause, only path, only location, *manner, path and cause and none of these components each in 6.25% of cases.

Lastly, L1 Dutch participants described cause and location in 30% of cases (cf. (114), manner, cause and location in 30% of cases, manner and cause in 20%, cause in 10% and manner, path and cause in 10%.

5.6.3. Boundary crossing

Figure 5.6.4: Boundary crossing location events across the four groups shows the distribution of boundary crossing caused location events.

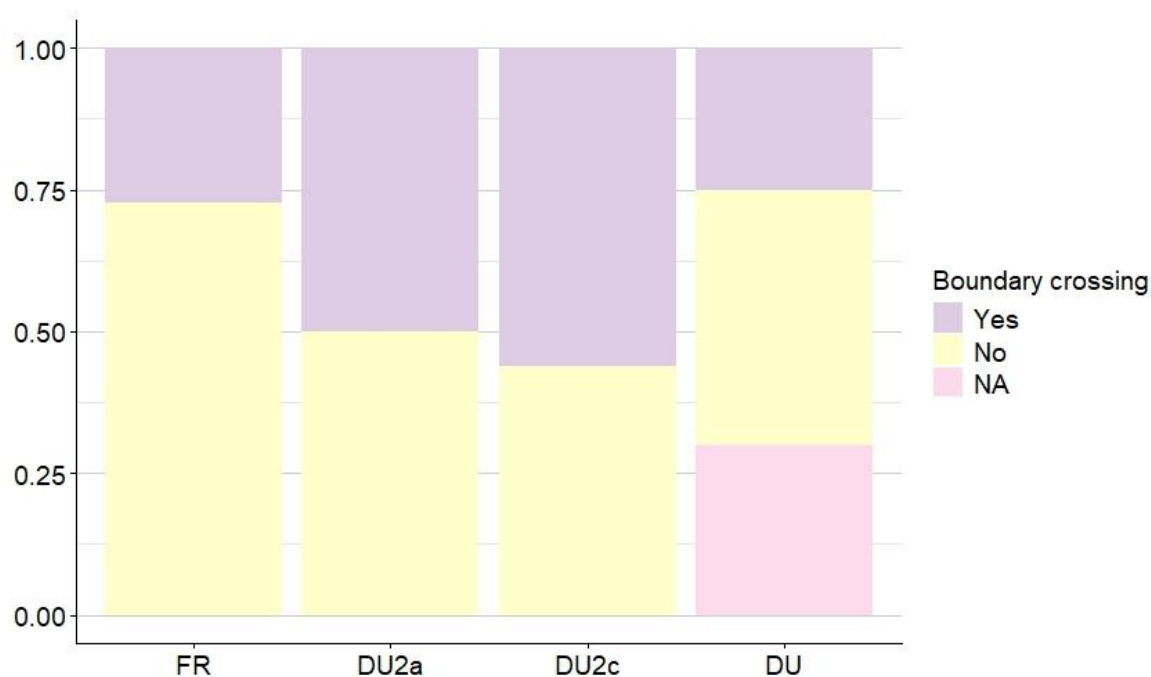


Figure 5.6.4: Boundary crossing location events across the four groups

Caused location events are boundary crossing in 27.27% of cases in L1 French (cf. (111), 50% of cases in DU2a, 58.82% of cases in DU2c as in

(113) and 25% in DU. The “NA” value in L1 Dutch corresponds to six cases where the figure was located in relation to another entity which acted upon it as in (115) where the relation between Sylvester and the lion is described. These cases were taken into account because of the gestures that accompanied them.

(115) en dan houdt ie die bij die staart vast (DU3, ME96)

[and holds it by the tail]

Figure 5.6.5 illustrates the distribution of boundary crossing caused location events per verb type. In L1 French, boundary crossing events features a cause verb whereas in Dutch they feature a manner-cause verb. In DU2a, boundary crossing events contain a *cause verb in 42.86% of cases, a manner-cause verb in 28.57% and a *manner-cause and cause verbs each in 14.29%. Lastly, in DU2c, boundary crossing events have a manner-cause verb in 60%, a cause verb in 30% and a *manner-cause verb in 10%.



Figure 5.6.5: Boundary crossing caused location events per verb type across the four groups

5.6.4. Density in speech with and without referential gestures

Figure 5.6.6 illustrates the distribution of semantic components in speech per group when utterances are accompanied by referential gestures and when they are not. It is important to note that as there were only 73 utterances describing caused location events, the data presented here are to be interpreted cautiously.

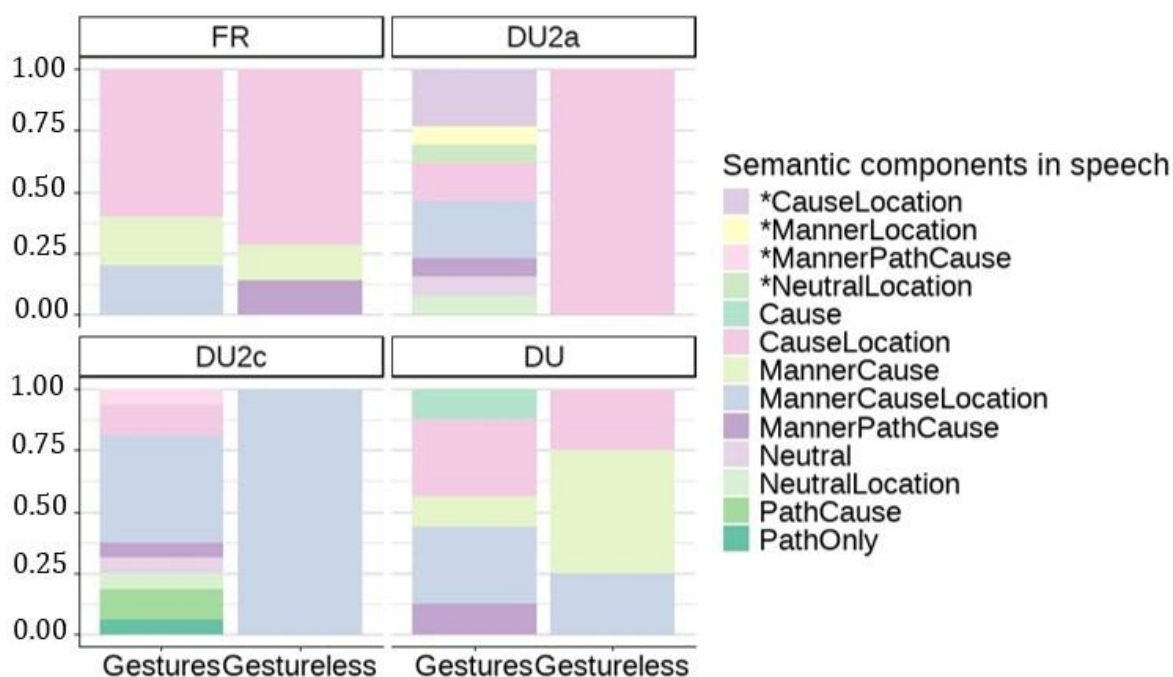


Figure 5.6.6: Density of semantic components in speech in relation to the presence or absence of referential gestures (CLE)

In L1 French, 68.18% of utterances were accompanied by gestures. Among those utterances, 60% conveyed cause and location, 20% manner and cause and 20% manner,

cause and location. Gestureless utterances conveyed cause and location in 71.43% of cases, manner and cause and manner, path and cause each in 14.286%.

In DU2a, 92.86% of utterances featured gestures. Among them, 23.08% expressed *cause and location and 23.08% manner, cause and location. In addition, 15.38% conveyed cause and location. There was only one utterance that did not feature any gestures and it conveyed cause and location.

In DU2c, 94.12% of utterances co-occurred with gestures. Among them, 43.75% expressed manner, cause and location. In addition, 12.5% expressed cause and location and 12.5% path and cause. Only one utterance did not feature any gestures. It expressed manner, cause and location.

Lastly, in L1 Dutch, 80% of utterances featured gestures. Among them, 31.25% expressed cause and location and 31.25% manner, cause and location. In addition, cause, manner and cause, and manner, path and cause were conveyed in 12.5%. Gestureless utterances conveyed manner and cause in 50% of cases, cause and location in 25% and manner, cause and location in 25%.

Because of the sample size, it would not be reasonable to draw any conclusions here.

5.6.5. Zoom in on CLIL learners

For the sake of completeness, three figures are presented in this section even though the amount of data is very limited.

Figure 5.6.7 and Figure 5.6.8 respectively present the semantic components encoded in the verbs and the number of different verbs used. Since there were few descriptions of caused location events, the graphs are almost the same: there were only two verbs that were used twice.

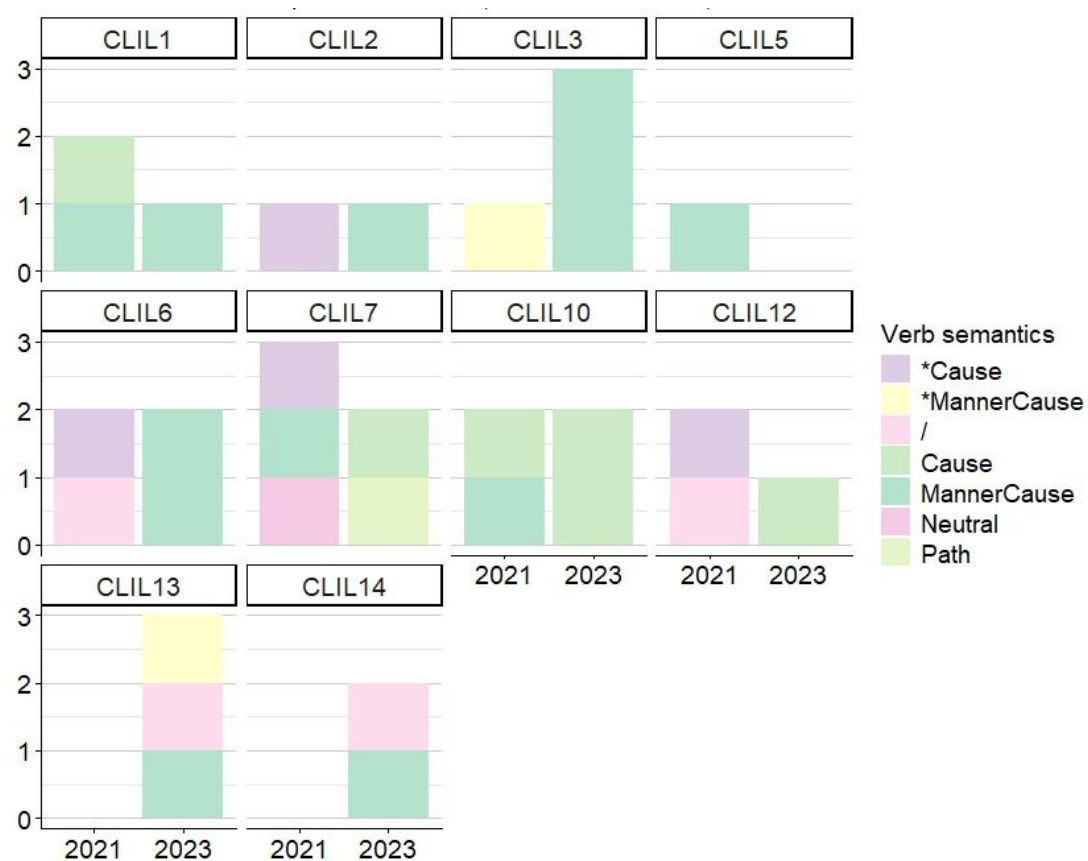


Figure 5.6.7: Semantic components in verbs per CLIL learner in 2021 and 2023 (CLE)

Let us thus have a look directly at Figure 5.6.8. Only eight learners described caused location events. Among them, four used a manner-cause verb in 2021 and six in 2023.

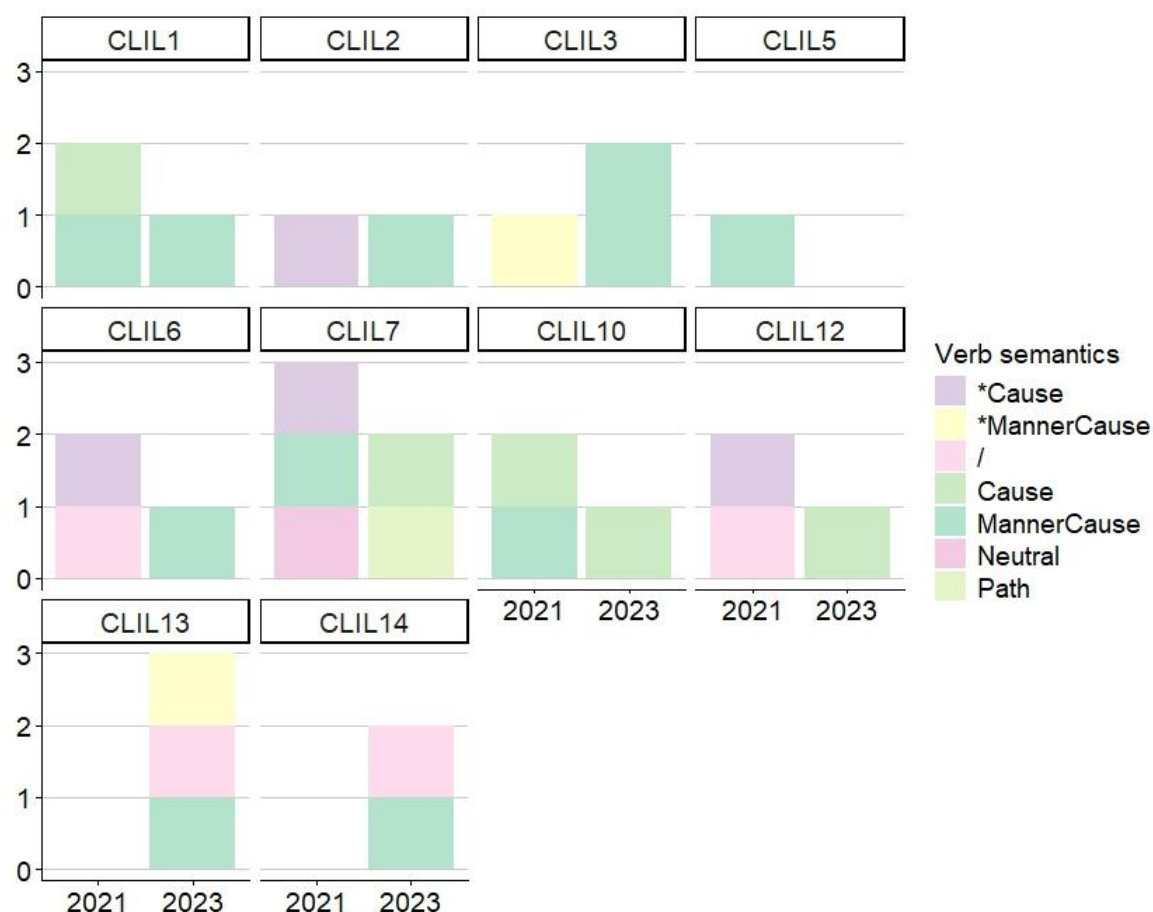


Figure 5.6.8: Number of different verbs used by CLIL learners in 2021 and 2023 (CLE)

In addition, some of them attempted to use a cause verb and a manner-cause verb or used a neutral verb.

Lastly, in the same vein, Figure 5.6.9 shows that only a few descriptions uttered by a few learners featured manner, cause and location and that learners found alternative ways to express this type of event such as describing only path or conveying the location as an end result.

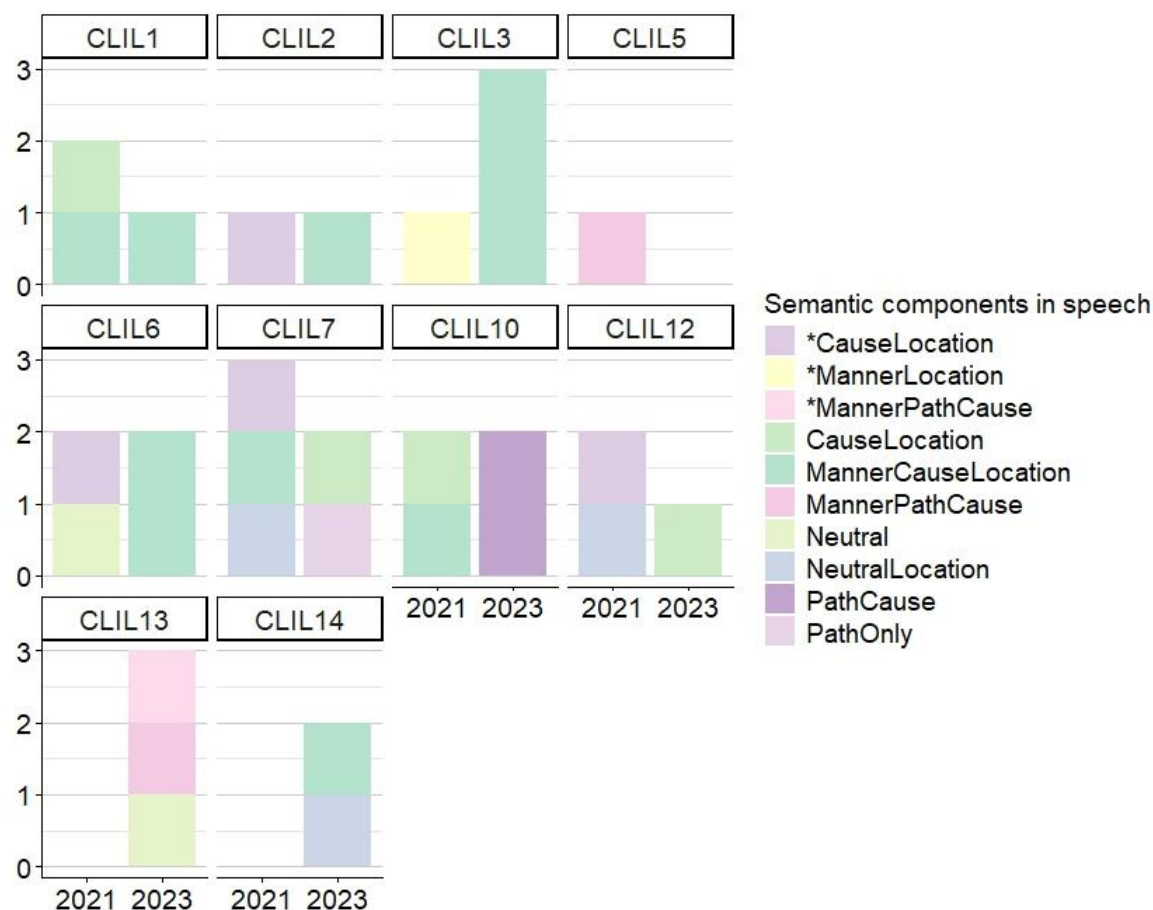


Figure 5.6.9: Semantic components encoded in speech across CLIL learners in 2021 and 2023 (CLE)

5.6.6. Conclusion

To describe caused location events, L1 French speakers tend to encode cause in the verb whereas L1 Dutch speakers also use manner-cause verbs. CLILa participants showed more variation but CLILc participants showed a preference for manner-cause verbs among other types. The in-depth analysis of L2 data revealed that not all learners described caused location events and among those who did, not all encoded both manner and cause in addition to location. Some learners opted for alternative methods to describe the events, and occasionally attempted to use cause or manner-cause verbs.

Contrary to the results of self-propelled and (un)intentional caused motion events, there is no big difference in terms of verb range between L1 and L2 speakers. This could be due to the narrower variety of events to describe or to a narrower lexical variety in the languages.

If we look at all the semantic components present in utterances, we see that L1 French participants predominantly conveyed cause and location whereas L1 Dutch speakers also included manner. Conversely, CLILa participants exhibited greater variability with a tendency to attempt encoding cause and location and to encode manner, cause and location. Similarly, CLILc also seemed to favor the encoding of manner, cause and location. However, a closer analysis of the L2 data revealed that only a subset of CLILc participants used manner-cause verbs together with location satellites.

L2 learners encoded boundary crossing events more often than L1 speakers. CLILa did so with *cause verbs and manner-cause verbs whereas CLILc did so with manner-cause verbs and cause verbs. L1 French speakers expressed boundary crossing events with cause verbs and L1 Dutch speakers with manner-cause verbs.

Lastly, the limited number of utterances precluded the drawing of any conclusions regarding density.

5.7. Location events

This section describes the semantic components encoded in verbs that describe location events (Section 5.7.1), the semantic components present in entire utterances (Section 5.7.2) and the density of semantic components with and without referential gestures (Section 5.7.3). Lastly, Section 5.7.4 zooms in on CLIL learners and Section 5.7.5 provides a summary of the main results.

5.7.1. Verb semantics

Figure 5.7.1 displays the semantic components present in the verbs used to describe location events (FR=178, DU2a=99, DU2c=140 and DU=146).

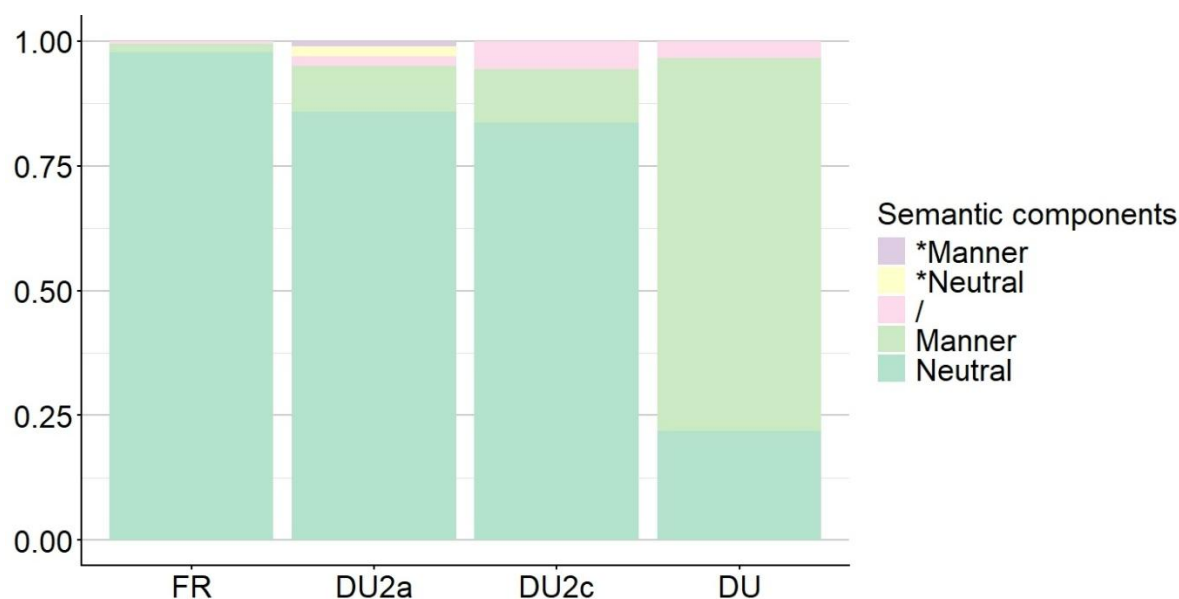


Figure 5.7.1: Semantic components in verbs across the four groups (LE)

In French, participants used neutral verbs in 97.77%, manner verbs in 1.68% and no verbs in 0.56% of cases to locate entities.

In DU2a, participants used neutral verbs in 85.86% of cases, manner verbs in 9.09%, *neutral verbs in 2.02%, no verbs in 2.02% and *manner verbs in 1.01%.

In DU2c, participants used neutral verbs in 83.57%, manner verbs in 10.71% and no verbs in 5.71% of cases.

In L1 Dutch, participants encoded manner in the verb in 74.66% of cases, used neutral verbs in 21.92% and no verbs in 3.42%.

Chi square tests were performed and revealed that the differences were highly significant between French and Dutch ($\chi^2=199.658689$, $p\text{-value}=4.412315e-44$), DU2a and DU ($\chi^2=107.998174$, $p\text{-value}=1.944688e-22$) and DU-DU2c ($\chi^2=120.367407$, $p\text{-value}=7.287015e-27$). The differences between FR and DU2a ($\chi^2=15.659364$, $p\text{-value}=3.512024e-03$) and FR and DU2c ($\chi^2=20.359232$, $p\text{-value}=3.793577e-05$) are also significant. The difference between learners in 2021 and 2023 is not significant ($\chi^2=6.321879$, $p\text{-value}=1.763652e-01$).

If we now have a look at the verb range of each group (Figure 5.7.2), we see that three manner verbs were used in French (*être assis* [sit], *se tenir* [stand] and one occurrence of *se la couler douce* which does not refer to the position but rather the chilling attitude),

three in DU2a (*liggen* [lie], *staan* [stand], *zitten* [sit]), four in DU2c (*hangen* [hang], *zitten*, *liggen*, *staan*) and three in Dutch (*zitten*, *staan*, *liggen*). In addition, L1 French used 13 neutral verbs (*être* [be], *être caché* [be hidden], *être posé* [be on], *être rempli de* [be filled with], *apercevoir* [glimpse], *attendre* [wait], *c'est* [this is], *il y a* [there is], *rester* [stay], *se planquer* [to hide], *se retrouver* [end up], *voir* [see]). DU2a participants used four neutral verbs (*blijven* [stay], *zijn* [be], *hebben* [have], and *wachten* [wait]) and two other verbs that were referring to the ongoing actions. DU2c used four neutral verbs as well (*blijven*, *zijn*, *wachten*, *zien* [see]) together with one verb referring to the ongoing action. Lastly, L1 Dutch speakers used four neutral verbs (*wachten*, *zich verstoppen* [to hide], *zien* and *zijn*).

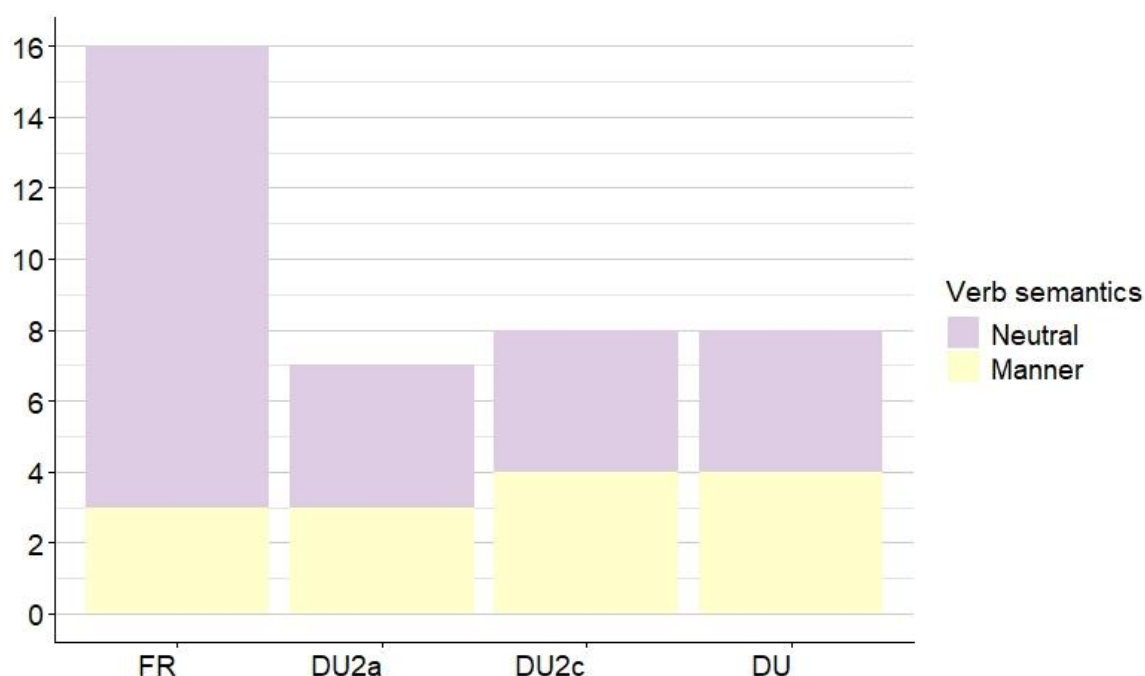


Figure 5.7.2: Number of different verbs in the descriptions of location events

Contrary to the other types of events where learners used a narrower variety of verbs, here they use a similar number. However, only a few participants used manner verbs to locate entities in Dutch, which also explains why they are not very frequent.

Lastly, the choice to classify the hiding events as location events is not ideal and can raise questions but it seemed to be the best option as these events were also described with either neutral or manner verbs.

5.7.2. Overall speech picture

Figure 5.7.3 the semantic components encoded in the utterances describing caused location events.

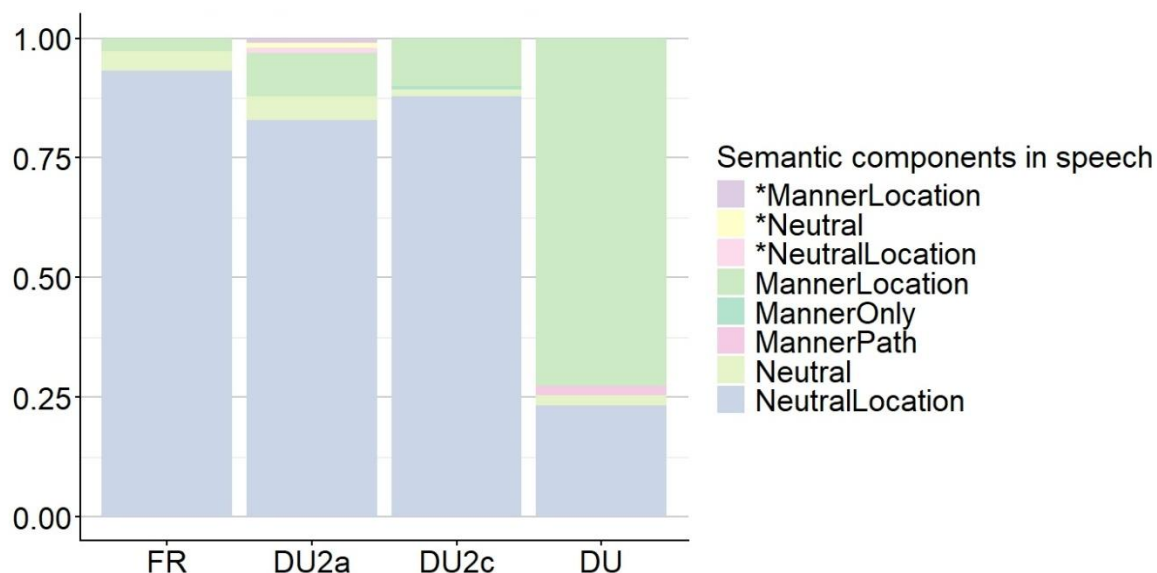


Figure 5.7.3: Semantic components encoded in speech across the four groups (LE)

In L1 French, participants expressed neutral location events in 92.74% as in (116), manner location events in 3.91% and encoded no components in 3.91%.

(116) % Donc là Titi était sur une *sur un arbre j'pense (FR4, ME76)
[so here Tweety was on a *on a tree I think]

In DU2a, participants described neutral location events in 82.83% (cf. (117)), manner location events in 9.09% and they encoded no components in 5.05%.

(117) Dus hij is op de boot met de lion (CLIL6a, ME81 & ME83)
[so he is in the boat with the lion]

CLILc participants expressed neutral location events in 87.86% of cases as illustrated in (118) and manner-location events in 10%.

(118) Dus Grosminet is op de boot (CLIL9c, ME81)
[so Sylester is on the boat]

Lastly, L1 Dutch participants encoded both manner and location in 72.60% of cases as in (119) and only location with a neutral verb in 23.29%.

(119) Dus de kat die zit op het water met dat boot (DU6, ME81)

[so the cat he is sitting on the water with the boat]

5.7.3. Density in speech with and without referential gestures

Figure 5.7.4 presents the semantic components in speech in utterances that are accompanied by gestures compared to those which are uttered without gestures.

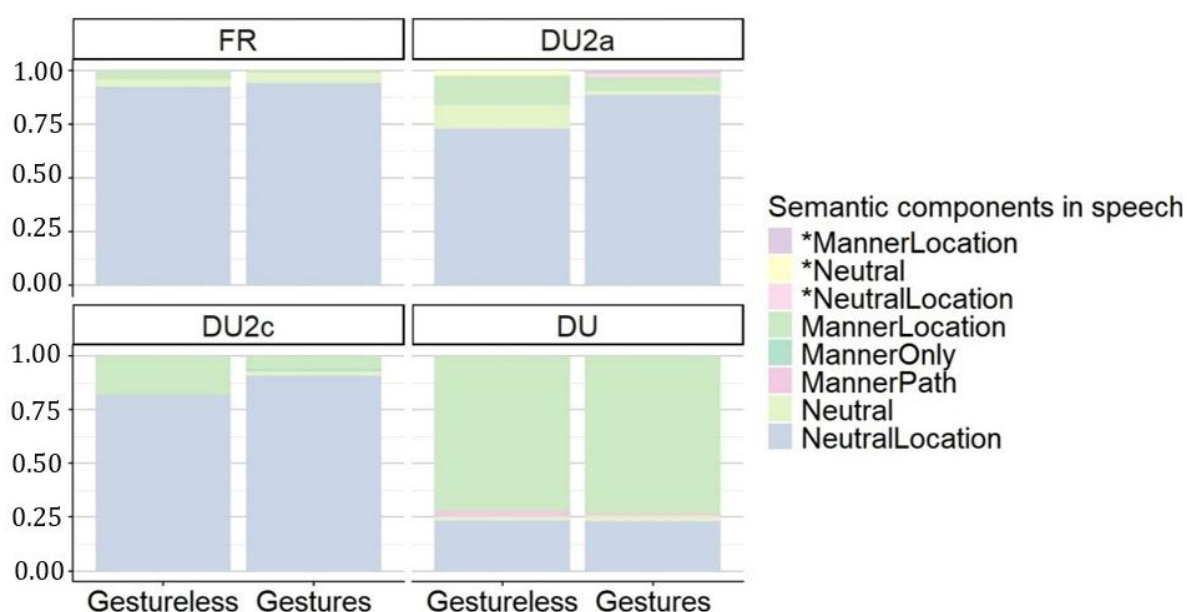


Figure 5.7.4: Density of semantic components in speech in relation to the presence or absence of referential gestures (LE)

In L1 French, 48.6% of utterances are accompanied by gestures. Among these utterances, 93.10% express neutral location events, 4.60% feature none of these semantic components and 2.30% manner and location. The distribution is similar when utterances are not accompanied by gestures (92.32% neutral location, 4.35% manner location and 3.26% neutral speech).

In DU2a, 62.63% of utterances feature gestures. Among these utterances, 88.71% express neutral location events, 6.45% manner location events. In addition, CLILa participants also conveyed *neutral location events, *manner location events and neutral speech, each in 1.61% of cases. Gestureless utterances conveyed neutral location events in 72.97% of cases, manner-location in 13.51% and neutral speech in 10.81%.

In DU2c, 68.51% of utterances are accompanied by gestures. Among these utterances, 90.63% express neutral location events and 6.25% manner location events. Gestureless utterances express location events with a neutral verb in 81.82% and with a manner verb in 18.18%.

Lastly, in L1 Dutch, 53.06% of utterances co-occurred with gestures. Among these utterances, 73.08% convey manner and location and 23.08% location with a neutral verb. Gestureless utterances show a similar distribution (72.06% of manner-location and 23.53% of neutral location).

5.7.4. Zoom in on CLIL learners

Figure 5.7.5: Semantic components in verbs per CLIL learner in 2021 and 2023 (LE) Figure 5.7.5 illustrates the semantic components encoded in the verbs used by CLIL learners to locate entities. CLIL1, CLIL3 and CLIL7 used posture verbs in 2021 and (CLIL1, CLIL2, CLIL3, CLIL5, CLIL7 and CLIL12 did so in 2023. Neutral verbs remained more frequent except for CLIL1 in 2021 and CLIL3 in 2023.



Figure 5.7.5: Semantic components in verbs per CLIL learner in 2021 and 2023 (LE)

If we look at the number of different verbs (cf. Figure 5.7.6), we see that CLIL1 is the only one who used different posture verbs both in 2021 and 2023. CLIL2 (in 2023), CLIL5 (in 2023), CLIL7 (in 2021 and 2023) and CLIL12 (in 2023) only used one posture verb.



Figure 5.7.6: Number of different verbs used by CLIL learners in 2021 and 2023 (LE)

Lastly, Figure 5.7.7 illustrates the semantic components CLIL learners encoded in speech in 2021 and 2023 to locate entities.

In line with the two previous graphs, we can observe that they mostly describe location using neutral verbs except for CLIL1 who also tended to encode manner in 2021 and 2023 and CLIL3 in 2023.

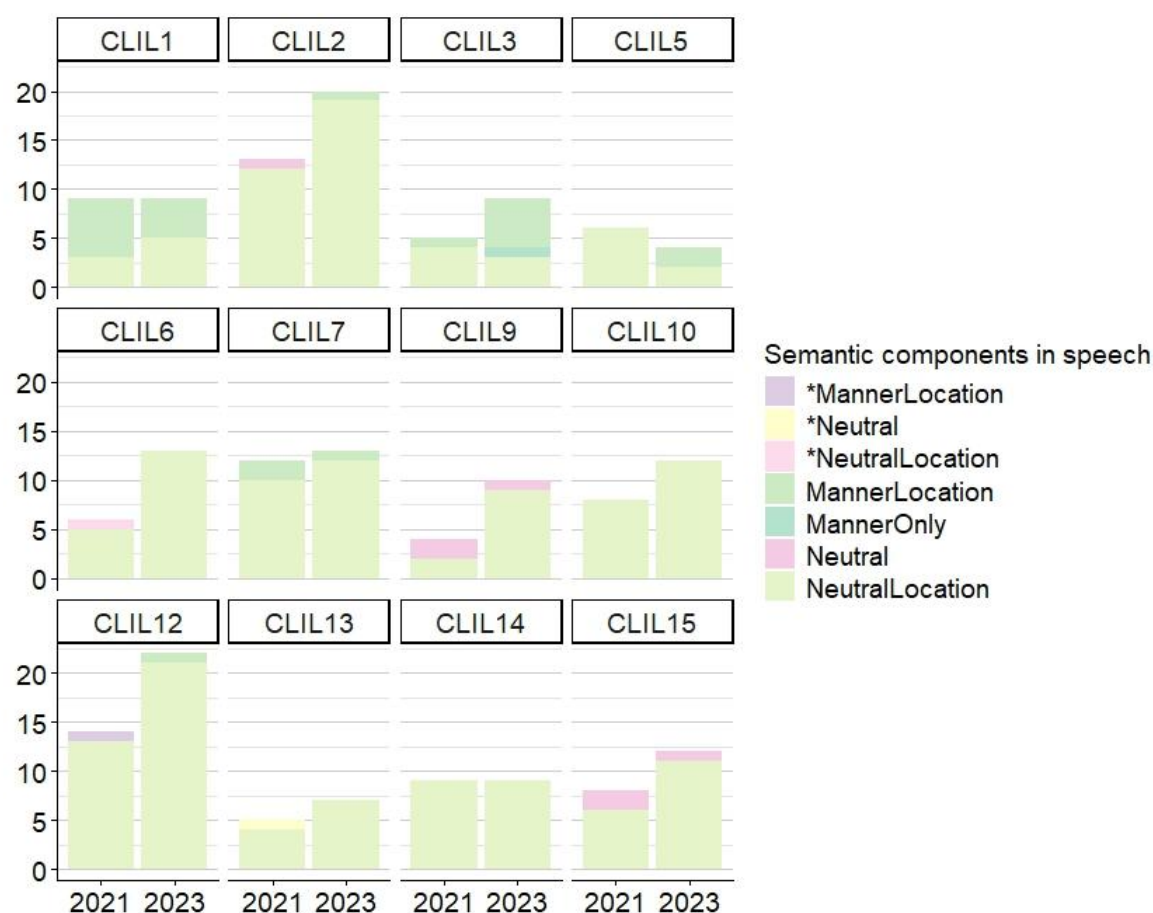


Figure 5.7.7: Semantic components encoded in speech across CLIL learners in 2021 and 2023 (LE)

5.7.5. Conclusion

To describe location events, L1 French speakers tend to use neutral verbs and thus only encode location whereas L1 Dutch speakers tend to use manner verbs, giving information on the posture of the entity together with location satellites. L2 learners tend to behave as in their L1 by using neutral verbs together with location satellites. A few of them are aware of the existence of posture verbs and use them, but the majority did not use any. Lastly, the density analysis showed a similar distribution of the semantic components in utterances irrespective of the presence or the absence of gestures.

5.8. Conclusion to Chapter 5

Before taking gestures and the multimodal expression of motion events into account, I wanted to have a look at speech only as many utterances are not accompanied by any gestures. The purpose of this chapter was to describe the semantic components encoded

in verbs and in speech in general and to compare the semantic richness of utterances featuring gestures with utterances without any gestures.

This chapter has shown that speakers do not tend to encode more semantic components in speech to compensate for a lack of gestures. In fact, the distribution of semantic components was similar in both conditions no matter the type of event described.

This chapter has also sketched the main patterns of the expression of self-propelled motion events, (un)intentional caused motion events, caused location events and location events in L1 French and L1 Dutch. In addition, it has given some insights into how L2 learners of Dutch express these events in their target language after 4 years of CLIL-program and 6 years of CLIL-program.

CHAPTER 6

MOTION EVENTS IN SPEECH AND GESTURES

6.1. Introduction

This chapter describes how self-propelled motion events, intentional caused motion events, unintentional caused motion events, caused location events and location events are described in speech and gesture in L1 French, L1 Dutch and L2 Dutch. Only the utterances that were accompanied by gestures are taken into account in the present chapter.

As the dataset contains 87.64% of first gestures, 9.89 % of repeated gestures (i.e., when participants produced a gesture again without any external prompting) and 2.47% of clarification gestures (see Table 6.1.1 for the details per group), they were all taken into account in the present chapter without any distinctions.

	FR		DU2a		DU2c		DU		Total	
	n	%	n	%	n	%	n	%	n	%
1st gesture	485	93.09 %	459	83.15 %	554	83.06 %	522	92.39 %	2020	87.64 %
Repetition	32	6.14%	86	15.58 %	73	10.94 %	37	6.55%	228	9.89%
Clarification gesture	4	0.77%	7	1.27%	40	6.00%	6	1.06%	57	2.47%
Total	521	100%	552	100%	667	100%	565	100%	2305	100%

Table 6.1.1: Distribution of repeated and clarification gestures across the four groups

The chapter is organized as follows: Section 6.2 outlines the general trends, while the subsequent sections each address a distinct category of motion events: Section 6.3 examines self-propelled motion events, Section 6.4 focuses on intentional caused motion events, Section 6.5 addresses unintentional caused motion events, Section 6.6 discusses caused location events, and Section 6.7 explores location events. Finally, Section 6.8 offers concluding remarks.

6.2. General tendencies

This section provides a broad overview of the gesture data and these data brought together with the speech data. Section 6.2.1 summarizes the number of gestures per group. Section 6.2.2 describes the types of gestures and Section 6.2.3 examines the number of gestures in relation to the number of utterances. Section 6.2.4 zooms in on CLIL learners and Section 6.2.5 provides some concluding remarks.

6.2.1. Number of gestures

Figure 6.2.1 illustrates the total number of gestures of each group. L1 French participants made 799 gestures, CLILa 957, CLILc 1336 and L1 Dutch 842. Even though the number of CLIL participants is lower than the number of L1 participants, the numbers of gestures are higher in L2 than in L1.

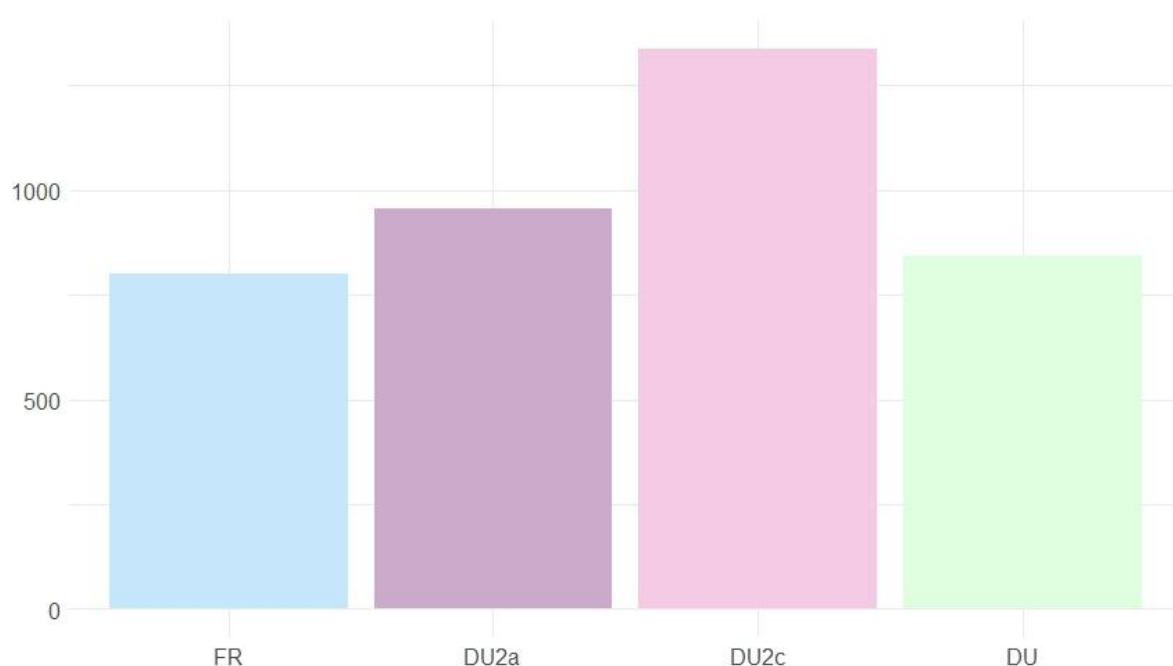


Figure 6.2.1: Total number of gestures per group

As the number of participants per group differs (15 FR, 12 CLILa, 12 CLILc, and 14 DU), the distribution of gestures across the different groups was calculated and is illustrated in Figure 6.2.2.

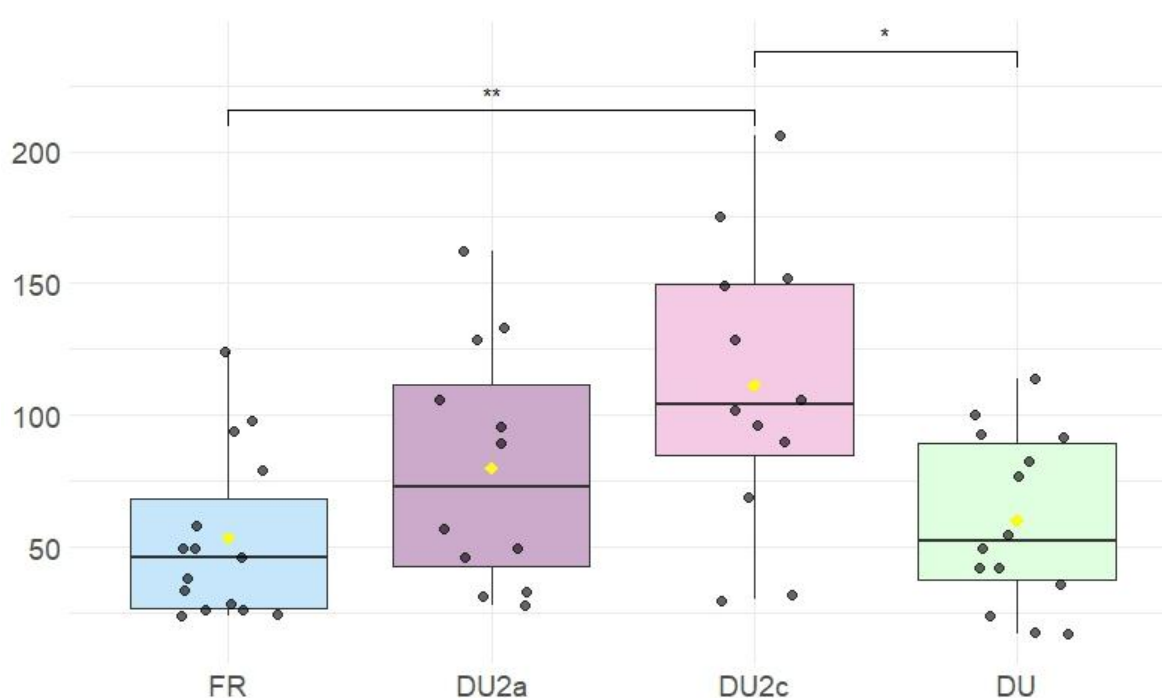


Figure 6.2.2: Distribution of gestures across the four groups

L1 French participants produced a mean³¹ of 52.07 gestures (SD= 30.58, Mdn= 46), a minimum of 23 and a maximum of 123 gestures.

DU2a participants produced a mean of 78.17 gestures (SD= 44.54, Mdn=71), a minimum of 27 and a maximum of 157 gestures.

DU2c participants produced a mean of 108.91 gestures (SD= 53.04, Mdn=101.5), a minimum of 30 gestures and a maximum of 205.

L1 Dutch participants produced a mean of 58.93 gestures (SD= 31.44, Mdn=51.5) a minimum of 17 and a maximum of 112 gestures.

³¹ The mean is represented by the yellow diamond on the graph.

Overall, L2 learners made more gestures than L1 speakers and in all groups. There are participants who gesture a lot and others who barely gesture. In addition, there is more variation among L2 speakers than among L1 speakers.

A Kruskal–Wallis test revealed a significant effect of group on the number of gestures ($\chi^2 = 10.41$, $p = .015$). Post-hoc pairwise Wilcoxon rank-sum tests, with Holm correction for multiple comparisons, showed that the DU2c group produced significantly more gestures than both L1 French participants ($p\text{-value}=0.010$, $r=0.29$, $d=1.36$) and L1 Dutch participants ($p\text{-value} = 0.027$, $r = 0.27$, $d = 1.17$). No other pairwise comparisons reached significance after correction. These results indicate that the DU2c group differs clearly from the L1 groups, while DU2a did not differ significantly from the other groups.

6.2.2. Gesture types

Figure 6.2.3 illustrates the distribution of the different gesture types across the four groups.

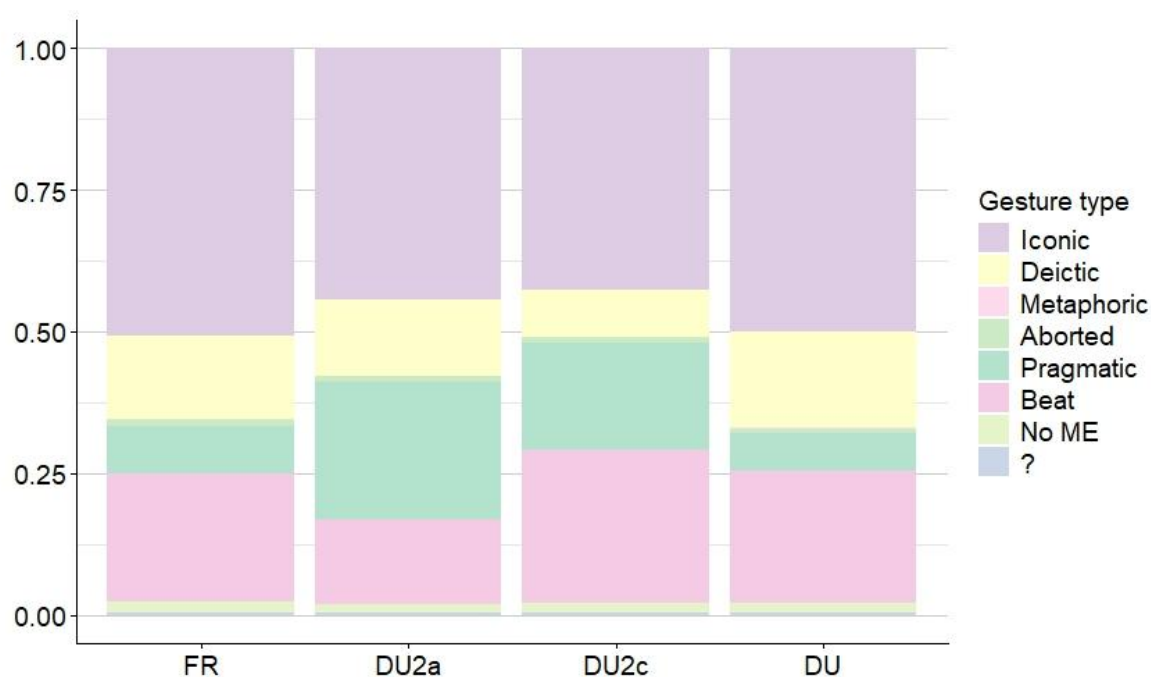


Figure 6.2.3: Gesture types across the four groups

Iconic gestures represent 50.81% of the gestures in L1 French ($n=406$), 44.41% in DU2a ($n=425$), 42.66% in DU2c ($n=570$) and 50.12% in L1 Dutch ($n=422$). Deictic gestures are produced in 14.64% of cases in French ($n=117$), 13.58% in DU2a ($n=130$), in 8.31% in DU2c ($n=111$) and in 16.86% in L1 Dutch ($n=142$). Only two metaphoric gestures were

identified in the data: one in L1 French (0.13%) and one in L1 Dutch (0.12%). In addition, 1.25% of gestures were aborted in L1 French ($n=10$), 0.84% in DU2a ($n=8$), 1.12% in DU2c ($n=15$) and 0.95% in L1 Dutch ($n=8$). L2 learners made pragmatic gestures in 24.24% of cases (DU2a, $n=232$) and 18.86% of cases (DU2c, $n=252$) whereas L1 French participants produced them in 8.86% ($n=66$) and L1 Dutch participants in 6.41% ($n=54$) of cases. Lastly, beats represent 22.65% of the gestures in L1 French ($n=181$), 14.94% in DU2a ($n=143$), 26.87% in DU2c ($n=359$) and 23.52% in L1 Dutch ($n=198$).

Figure 6.2.4 shows the distribution of referential and non-referential gestures across the four groups. Referential gestures include iconic, deictic and metaphoric gestures whereas non-referential gestures encompass beats and pragmatic gestures. The gestures that did not depict any motion events (No ME), were aborted (Aborted) or unidentified (?) were excluded from this analysis.

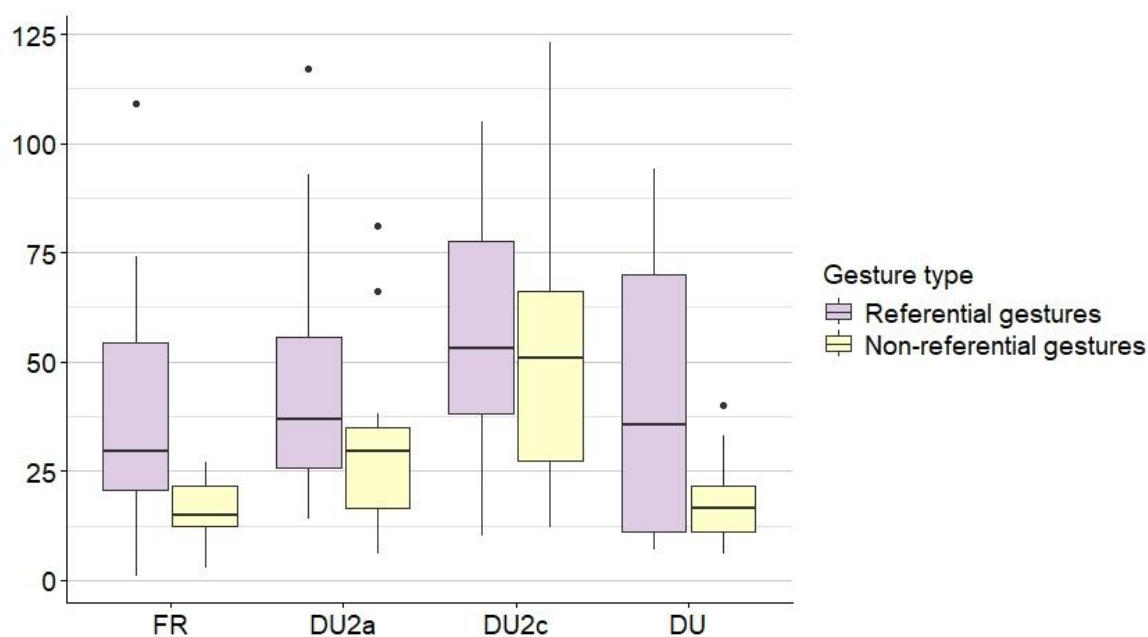


Figure 6.2.4: Distribution of referential and non-referential gestures across the four groups

L1 French participants produced a mean of 37.4 referential gestures ($SD=29.7$, $Mdn=29.5$, $min=1$, $max=109$) and a mean of 16.5 of non-referential gestures ($SD=6.95$, $Mdn=15$, $min=3$, $max=27$).

DU2a participants made a mean of 46.2 referential gestures (SD=31.3, Mdn=37, min=14, max= 117) and a mean of 31.2 non-referential gestures (SD=22.5, Mdn=29.5, min=6, max=81).

DU2c participants produced a mean of 56.8 referential gestures (SD=31, Mdn=53, min=10, max=105) and a mean of 50.9 non-referential gestures (SD=30.3, Mdn=51, min=12, max=123).

L1 Dutch participants made a mean of 40.4 referential gestures (SD=31, Mdn=35.5, min=7, max=94) and a mean of 18 non-referential gestures (SD=10.1, Mdn=16.5, min=6, max=40).

A chi-square test revealed a significant difference in the distribution of referential and non-referential gestures across languages ($\chi^2 = 76.589$, $p = 2.2e-16$). Post-hoc pairwise comparisons with Bonferroni correction showed that the proportion of non-referential gestures was significantly higher in DU2c (47%) than in FR (32%, $p = 8.6e-11$), DU2a (40%, $p = 0.008$), and DU (31%, $p = 6.1e-13$). The fact that learners made significantly more gestures in 2023 than in 2021 is rather surprising.

Among the non-referential gestures, we find word searching gestures. Figure 6.2.5 shows that L1 French speakers made 16 word searching gestures, L1 Dutch speakers 23 and CLIL learners 115 in 2021 and 100 in 2023. The number of these gestures has thus slightly decreased in two years, but it is still substantial. A chi-square test revealed a significant difference in the number of word searching gestures across languages ($\chi^2 = 124.11$, $p = 2.2e-16$). Post-hoc pairwise comparisons with Bonferroni correction showed that DU2a learners made significantly more word searching gestures than L1 French speakers ($p < 2e-16$) and L1 Dutch speakers ($p < 2e-16$) and that DU2c learners produced significantly more word searching gestures than L1 French speakers ($p < 2e-16$) and than L1 Dutch speakers ($p < 2e-14$). However, the difference between the two learners groups is not significant.

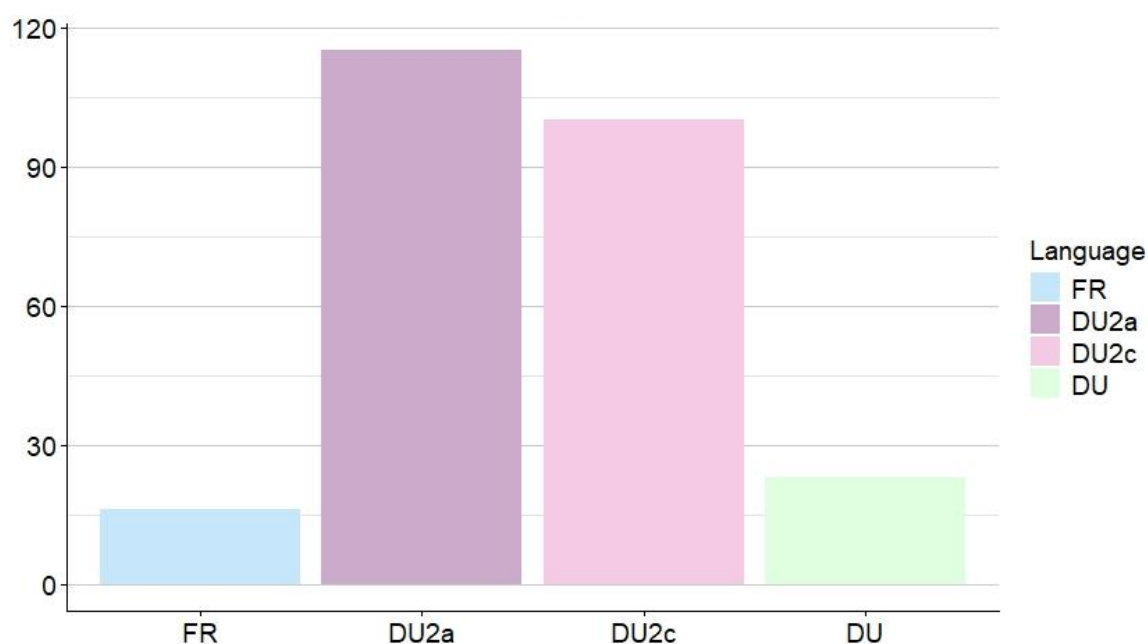


Figure 6.2.5: Word searching gestures across the four groups

If we have a look at the type of word searching gestures (see Figure 6.2.6), we see that in L1 French, 62.50% are iconic and 37.5% are pragmatic. In DU2a, 59.80% are pragmatic, 38.40% are iconic and 1.80% aborted. In DU2c, 64.60% are pragmatic and 35.40% iconic. Lastly, in L1 Dutch, 52.20% are pragmatic and 47.8% iconic.

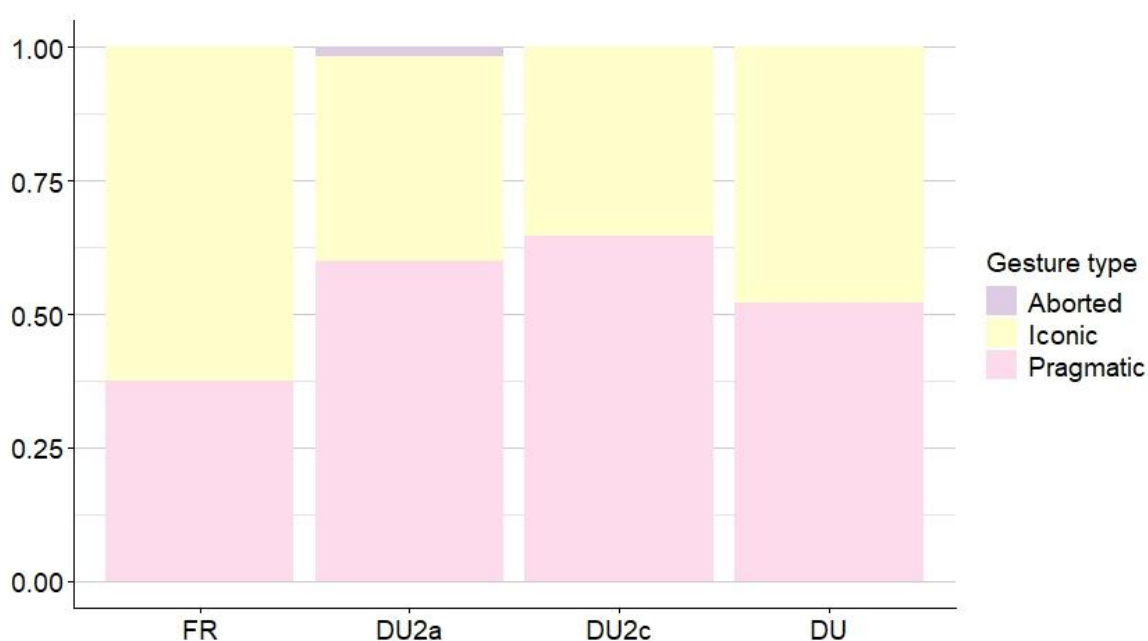


Figure 6.2.6: Distribution of word searching gesture types across the four groups

Figure 6.2.7 illustrates a pragmatic word searching gesture. Here, the participant is looking for a verb, and she is shaking her hands away from each other and then towards each other a couple of times as she is uttering *hij* followed by a filled pause and an unfilled pause.



Figure 6.2.7: Pragmatic word searching gesture co-occurring with "*en hij* <> / pffff *hij* <> % *met Grosminet in de water van zijn hoofd*" (CLIL2a, ME97) [*and he* <> / % *he* <> % *with Sylvester into the water of his head*]

On the other hand, Figure 6.2.8 illustrates an iconic word-searching gesture. The participant is trying to remember how to say "slide" in Dutch, and he produced a path gesture indicating Sylvester's trajectory during an unfilled pause, repeated it during the filled pause that follows and then uttered the verb.



Figure 6.2.8: Iconic word-searching gesture co-occurring with "*Grosminet* <> // <> *glijden*" (CLIL5a, ME110) [*Sylvester* <> // <> *slide*]

Word searching gestures tend to be pragmatic in L1 - especially in French - and there is no notable differences between 2021 and 2023 in L2 where word searching gestures are more often pragmatic, that is cyclic gestures as in Figure 6.2.7 rather than repeated iconic gestures during (un)filled pauses as in Figure 6.2.8. However, none of the differences presented here are significant.

6.2.3. Number of gestures & Number of utterances

In this section, all types of gestures were included in the analyses except the gestures that did not depict any motion events (No ME).

Figure 6.2.9 shows the distribution of the number of utterances (see Section 5.2.1 for the detailed analysis) and gestures (see Section 6.2.1 for the detailed analysis) across the four groups. It reveals that the median number of gestures and that of utterances are close in the L1 groups whereas the median number of gestures is much higher than that of utterances in the L2 groups. L2 learners produced more gestures than utterances. In addition, there is more variation in the number of gestures than in the number of utterances.

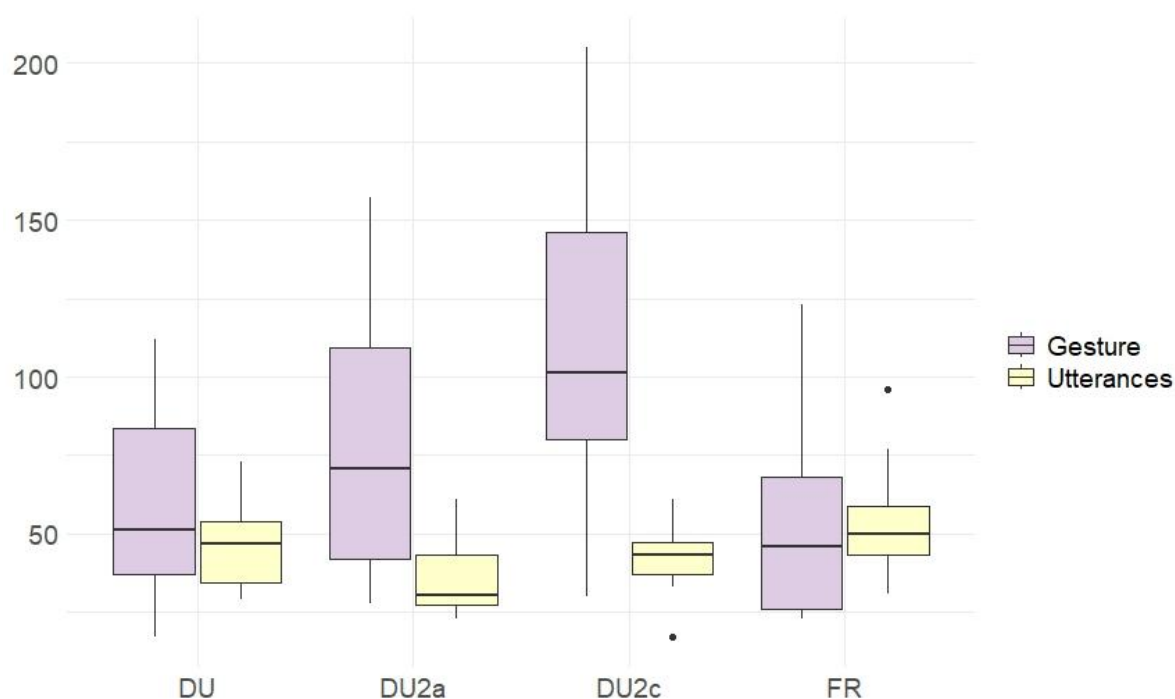


Figure 6.2.9: Distribution of the number of utterances and gestures across the four groups

Figure 6.2.10 illustrates the ratio of gestures per utterance. L1 French speakers made a mean of 0.98 gestures per utterance (see blue dot), L1 Dutch speakers 1.22 whereas CLILa participants made a mean of 2.11 gestures per utterance and CLILc 2.45. A Shapiro test showed that the data is distributed normally. A one-way ANOVA was thus performed to examine the effect of language on ratio. There was a highly significant effect of language, $F(3, 49) = 15.83$, $p = 2.51e-07$, $\eta^2 = 0.49$, indicating that language accounted for nearly 49% of the variance in ratio. Post-hoc Tukey tests revealed that DU2a

($p=0.00045$) and DU2c ($p=0.0000032$) had significantly higher ratios than L1 French. In addition, L1 Dutch had a significantly lower ratio than DU2a ($p=0.0025$) and DU2c ($p=0.0000237$), while L1 Dutch vs L1 French and DU2c vs DU2a were not significant.

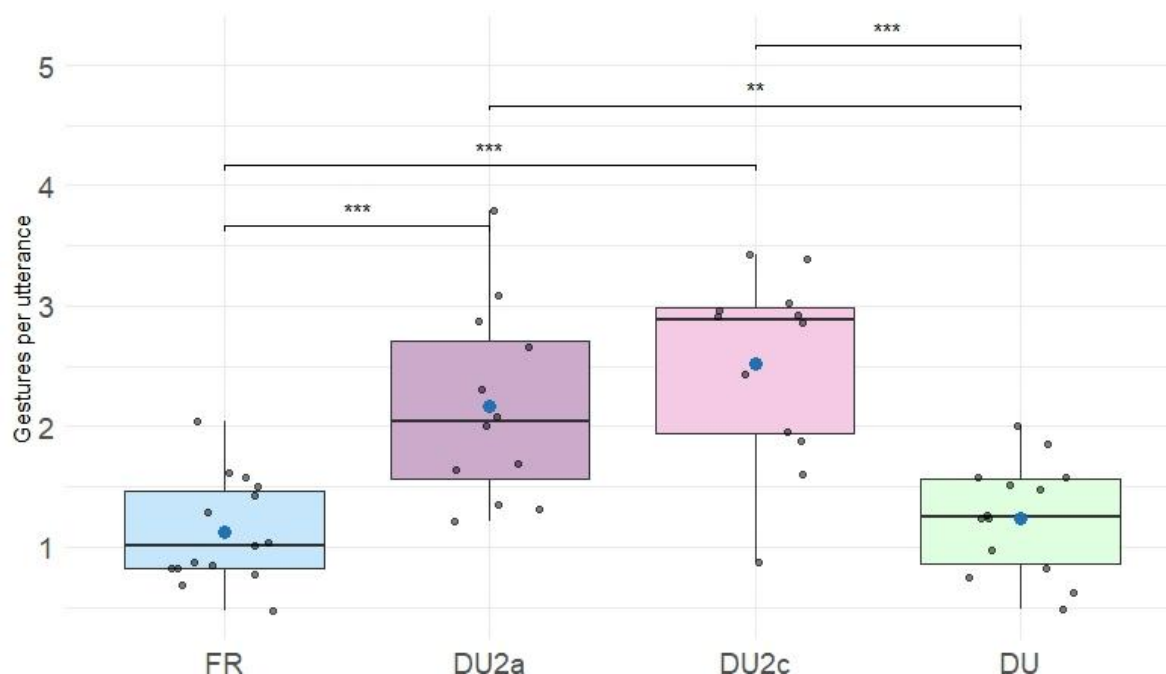


Figure 6.2.10: Number of gestures per utterance across the four groups

Figure 6.2.11 presents the distribution of the number of utterances and referential gestures across the four groups. The median number of referential gestures is lower than the one of utterances in the L1 groups and higher in the L2 groups. In addition, there is more variation in the number of referential gestures than in the number of utterances, which are more homogeneous.

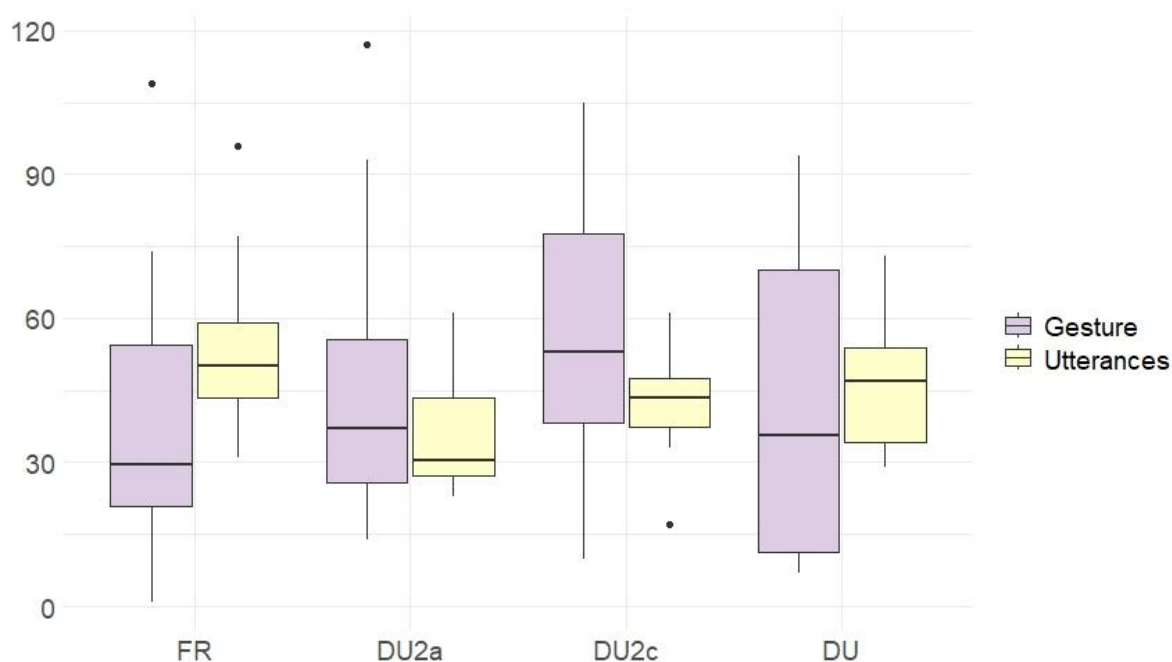


Figure 6.2.11: Distribution of the number of utterances and referential gestures across the four groups

Figure 6.2.12 displays the numbers of referential gestures per utterance across the four groups. It can be seen that L1 French speakers made a mean of 0.68 gestures per utterance (see blue dot) and L1 Dutch speakers 0.79 gestures whereas L2 learners made a mean of 1.26 gestures per utterance (DU2a) and 1.24 (DU2c). A one-way ANOVA was conducted to examine the effect of language on ratio. There was a significant effect of language, $F(3, 48) = 4.62$, $p=0.006$, $\eta^2 = 0.22$, indicating that language accounted for approximately 22% of the variance in ratio. Post-hoc Tukey tests revealed that DU2a ($p=0.026$) and DU2c ($p=0.033$) had significantly higher ratios than L1 French. No other pairwise comparisons were significant, although L1 Dutch vs DU2a showed a trend ($p=0.098$).

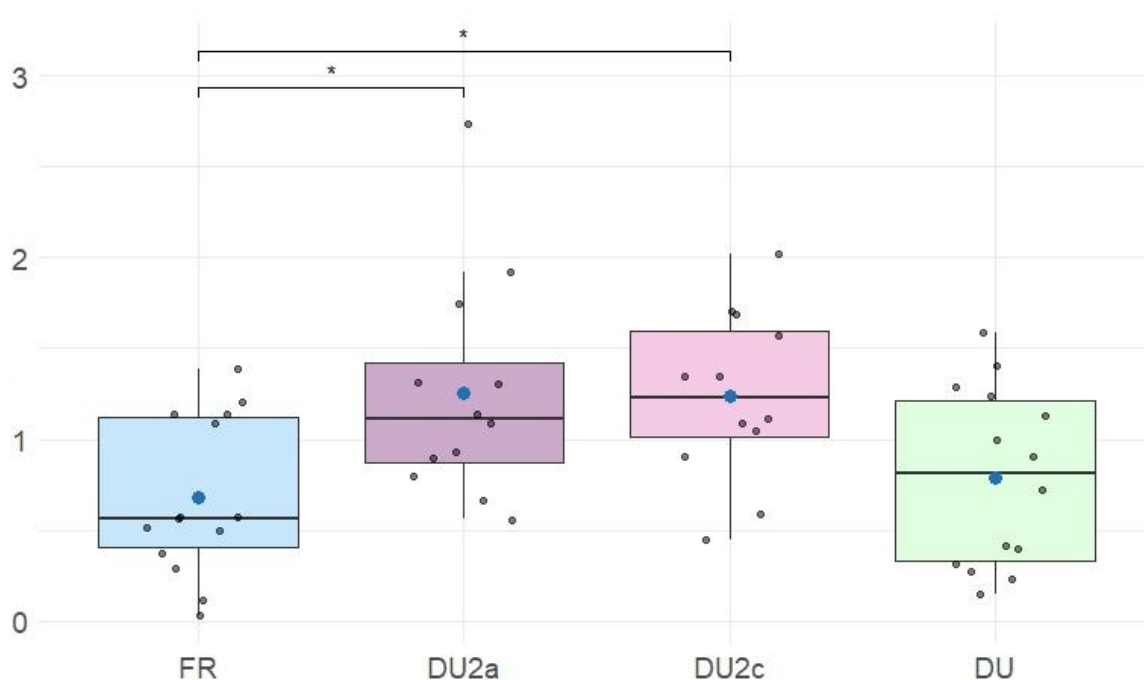


Figure 6.2.12: Number of referential gestures per utterance across the four groups

6.2.4. Zoom in on CLIL learners

Figure 6.2.13 illustrates the number of utterances, referential gestures, and non-referential gestures of each learner in 2021 and 2023.

Seven learners (CLIL4, CLIL6, CLIL10, CLIL12, CLIL13, CLIL14, CLIL15) produced more utterances in 2023 than in 2021, three (CLIL1, CLIL2, CLIL7) a similar number and one (CLIL5) fewer.

Among the seven learners who produced more utterances, six also produced more referential and more non-referential gestures in 2023 than in 2021. The seventh one (CLIL9) produced fewer referential and non-referential gestures.

Among the three learners who produced a similar number of utterances in 2021 and 2023, two produced more referential gestures and fewer non-referential gestures and one produced fewer referential gestures and more non-referential gestures.

CLIL4 did not only make fewer utterances, he also made fewer referential and non-referential gestures.

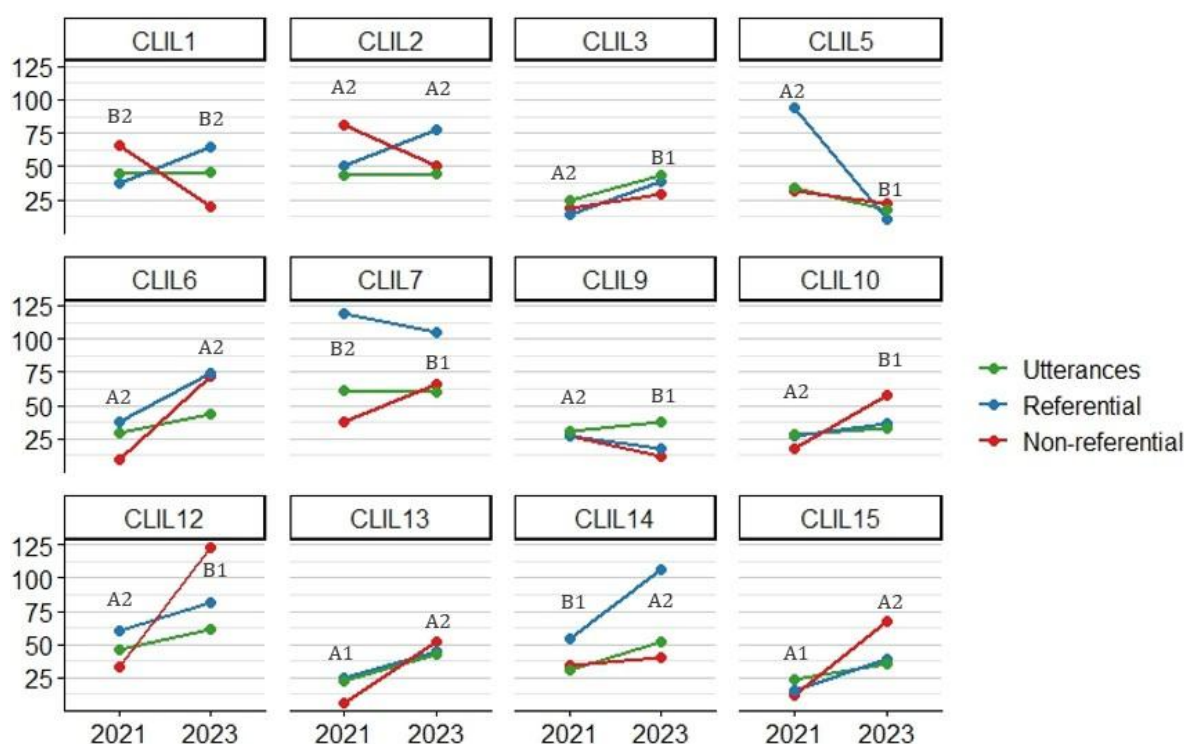


Figure 6.2.13: Number of utterances, referential and non-referential gestures per CLIL participant in 2021 and 2023

No direct correlation appears to exist between an increase in proficiency levels and a corresponding increase or decrease in referential and non-referential gestures. This observation is supported by instances where learners maintained consistent proficiency levels across both years yet exhibited variations in their use of (non-)referential gestures. Furthermore, among learners who demonstrated higher proficiency in 2023, some displayed an increased frequency of (non-)referential gestures, while others showed a reduced frequency.

6.2.5. Conclusion

This section has demonstrated considerable interindividual variability in gesture rates, with even greater variation observed in L2 speakers. Furthermore, L2 participants exhibited a significantly higher frequency of gestures compared to L1 speakers. When focusing solely on referential gestures, only DU2c produced a significantly greater number of gestures than L1 speakers. Additionally, L2 learners engaged in significantly more word-searching gestures than L1 speakers, which is expected. Although there was a slight reduction in word-searching gestures from 2021 to 2023, this difference was not statistically significant. Finally, a notable increase in utterance production was observed

among the majority of learners in 2023 compared to 2021. However, the evolution of gesture rate exhibited greater individual variability.

6.3. Self-propelled motion events

This section looks at how self-propelled events are expressed in gestures and then in speech and gestures altogether. Section 6.3.1 examines the types of gestures used in the descriptions of self-propelled motion events, Section 6.3.2 analyzes the semantic components encoded in gestures, Section 6.3.3 elaborates on gesture viewpoints and Section 6.3.4 looks at boundary crossing gestures. Consequently, Section 6.3.5 delves into the synchronization between speech and referential gestures, Section 6.3.6 explores the semantic components encoded in speech and gestures altogether and Section 6.3.7 zooms in on the specificities in L2 Dutch. Finally, Section 6.3.8 provides some concluding remarks.

6.3.1. Gesture types

Figure 6.3.1 presents the types of gestures used in the descriptions of self-propelled motion events.

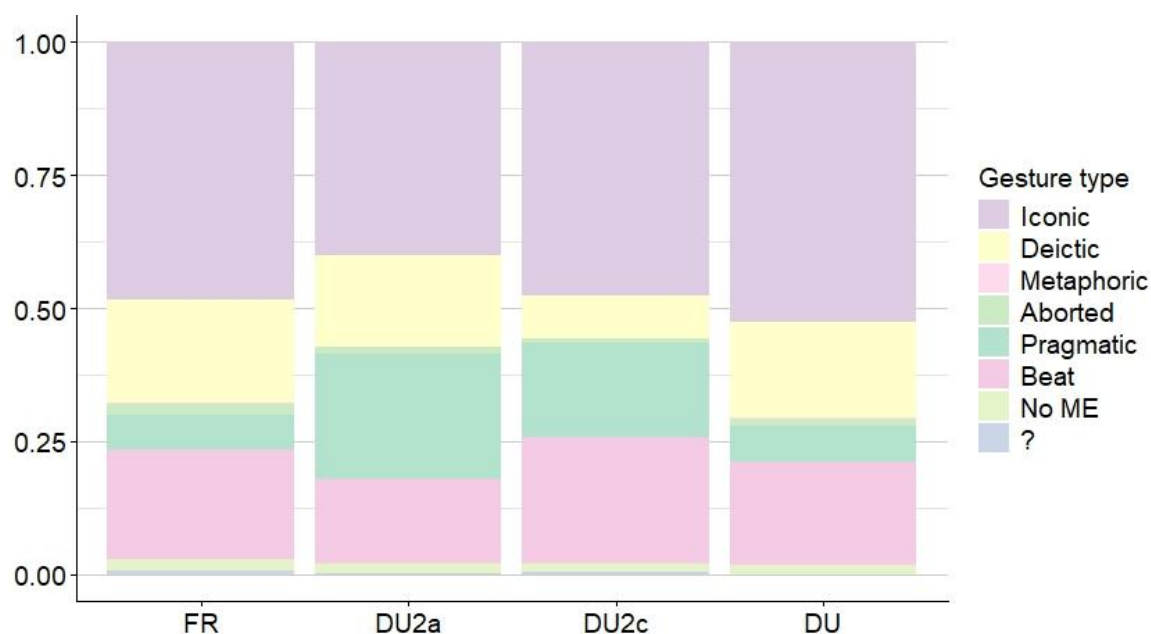


Figure 6.3.1: Gesture types across the four groups (SPME)

Iconic gestures represent 48.15% of L1 French participants' gestures (n=156), 39.61% of CLILa participants' gestures (n=143), 47.33% of CLILc participants' gestures (n=239) and 52.54% of L1 Dutch participants' gestures (n=207). In addition, participants also produced deictic gestures (19.44% in L1 French (n=63), 17.45% in DU2a (n=63), 7.92% in DU2c (n=40) and 18.02% in L1 Dutch (n=71)). Pragmatic gestures were also identified in 6.48% of cases in L1 French participants' gesture (n=21), 23.82% of DU2a participants' (n=86), 17.82% of DU2c participants' (n=90) and 6.85% of L1 Dutch participants' (n=27). Lastly, beats were also rather prominent: 20.68% in L1 French (n=67), 16.07% in DU2a (n=58), 23.96% in DU2c (n=121) and 19.29% in L1 Dutch (n=76).

Figure 6.3.2 and Figure 6.3.3 illustrate how the number of utterances and referential gestures describing self-propelled motion events come together.

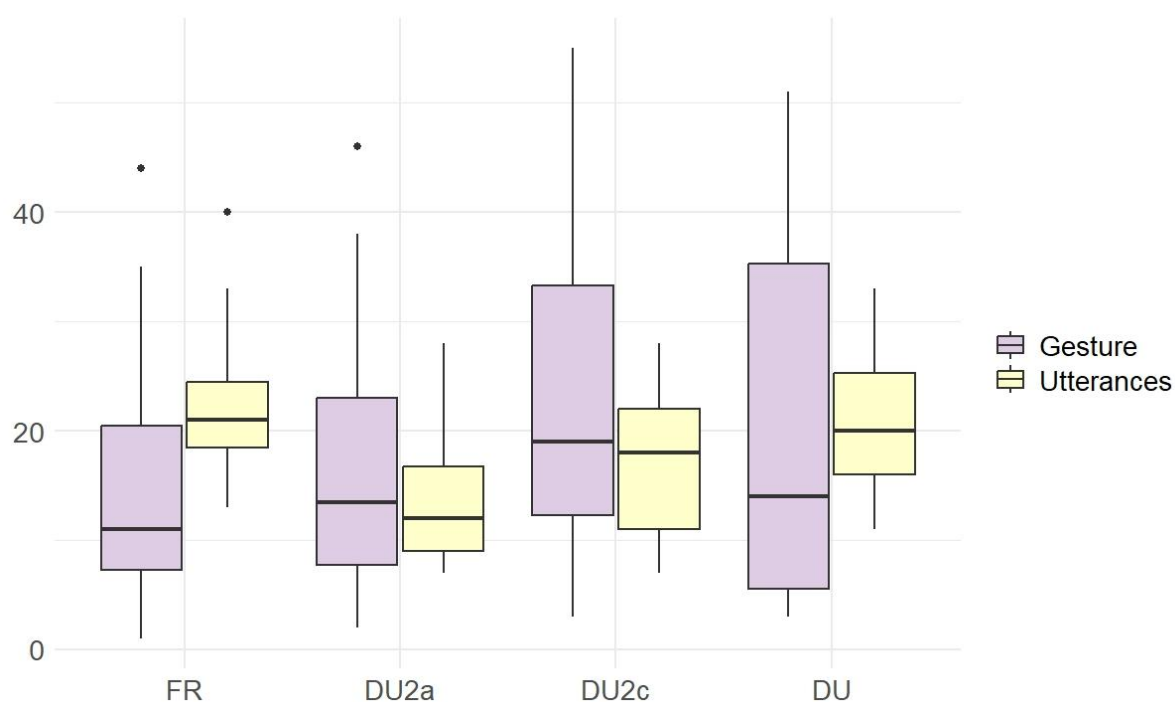


Figure 6.3.2: Distribution of utterances and referential gestures across the four groups (SPME)

L1 French participants produced an average of 22.93 utterances and 15.71 referential gestures, L1 Dutch participants made an average of 20.93 utterances and 19.93 referential gestures. CLILa participants produced an average of 13.75 utterances and 17.16 referential gestures whereas CLILc participants made an average of 17.5

utterances and 23.25 referential gestures. CLIL learners thus made fewer utterances than L1 speakers in average but CLILc more than CLILa and more gestures in average than L1 speakers with CLILc with the highest gesture rate. In fact, L1 French made 0.65 gestures per utterance, L1 Dutch speakers 0.83, CLILa learners 1.16 and CLILc learners 1.24.

A Shapiro test showed the data was normally distributed. A one-way ANOVA revealed a significant effect of language on ratio, $F(3, 48) = 3.30$, $p = .028$, $\eta^2 = 0.17$. Post-hoc Tukey tests indicated that L1 French had a significantly lower ratio than DU2c ($p=0.043$), while L1 French vs. DU2a showed a non-significant trend ($p=0.098$). All other comparisons were not significant.

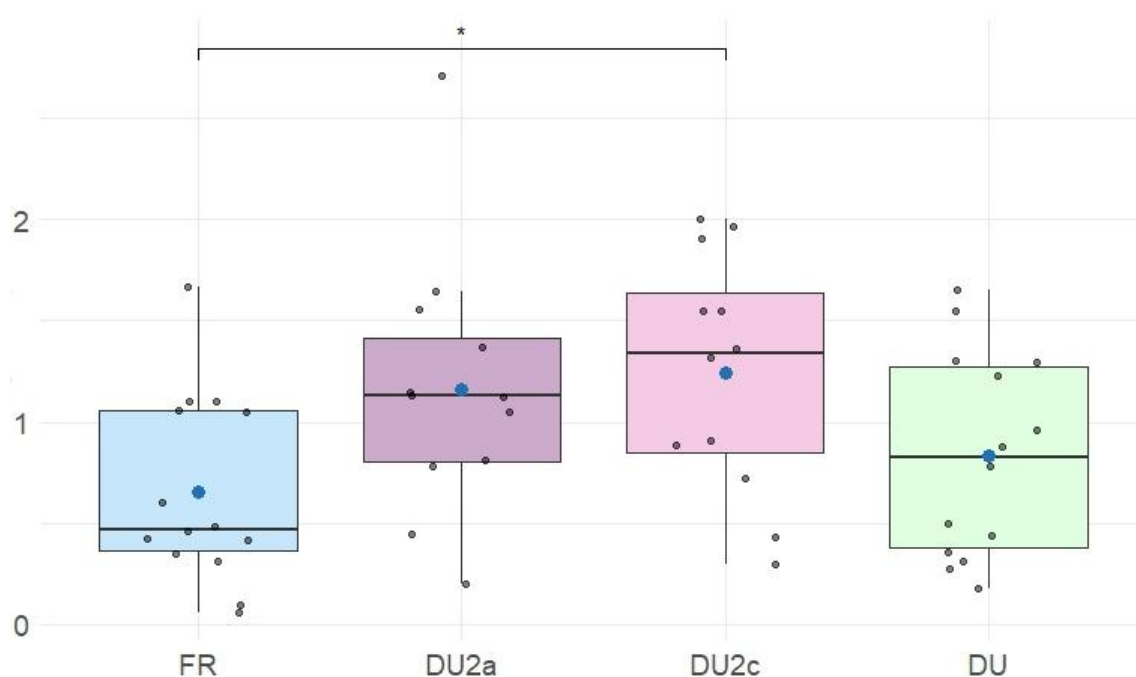


Figure 6.3.3: Number of referential gestures per utterance (SPME)

6.3.2. Gesture semantics

Figure 6.3.4 illustrates the semantic component encoded in the referential gestures.

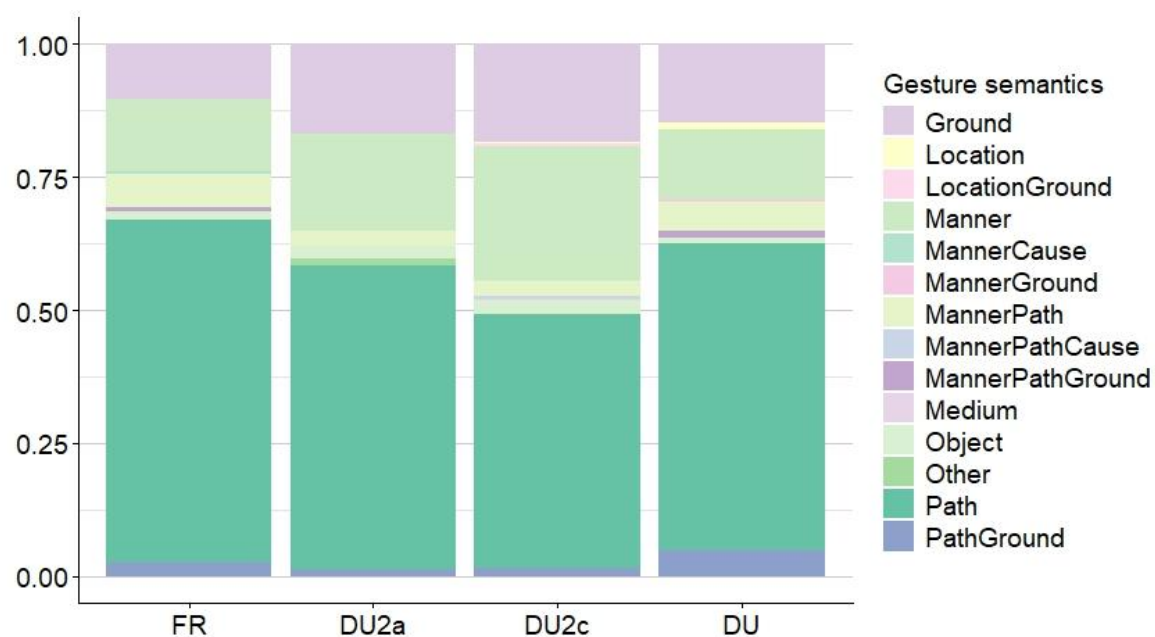


Figure 6.3.4: Gesture semantics (SPME)

Path is the semantic component that is encoded the most often in all groups (55% in L1 French (see Figure 6.3.5), 50.18% in L1 Dutch, 49.27% in DU2a and 46.15% in DU2c).



Figure 6.3.5: Path gesture co-occurring with "*quand il est sorti*" (FR6, ME23) [when he got out]

Manner is encoded in 24.18% of cases in DU2c as illustrated in Figure 6.3.6 where the participant is enacting the action of walking, 16.10% in DU2a, 13.18% in French and 11.47% in L1 Dutch.



Figure 6.3.6: Manner gesture co-occurring with "*Hij is zo aan het stappen*" (CLIL1c, ME77) [he is walking like that]

Manner and path are encoded in 4.09% of gestures in L1 French, 3.23% in L1 Dutch, 2.66% in DU2a and 2.20% in DU2c.

In addition, participants tended to locate entities, most of the time the figure when they initiated their descriptions. Location gestures represent 12.20% of DU2a participants' gestures, 11.83% of L1 Dutch participants', 10.91% of L1 French participants' and 2.56% of DU2c participants'. Ground gestures were also identified in DU2c (18.32%), DU2a (15.12%), L1 Dutch (13.62%) and L1 French (9.09%).

Lastly, the dataset also features conflated path-ground gestures (4.30% in L1 Dutch, 2.27% in L1 French, 1.47% in DU2c and 1.46% in DU2a), manner-path gestures (4.09% in L1 French, 3.23% in L1 Dutch, 2.66% in DU2a and 2.20% in DU2c) and manner-path-ground gestures (1.08% in L1 Dutch and 0.91% in L1 French).

If we now look at the number of path gestures that accompany utterances featuring referential gestures, Figure 6.3.7 shows us that the four groups show a rather similar behavior. The median is the lowest in L1 French (0.68, $M=0.68$, $SD=0.20$) compared to 0.69 in L1 Dutch ($M=0.69$, $SD=0.18$), 0.72 in DU2a ($M=0.72$, $SD=0.39$) and 0.76 in DU2c ($M=0.77$, $SD=0.74$).

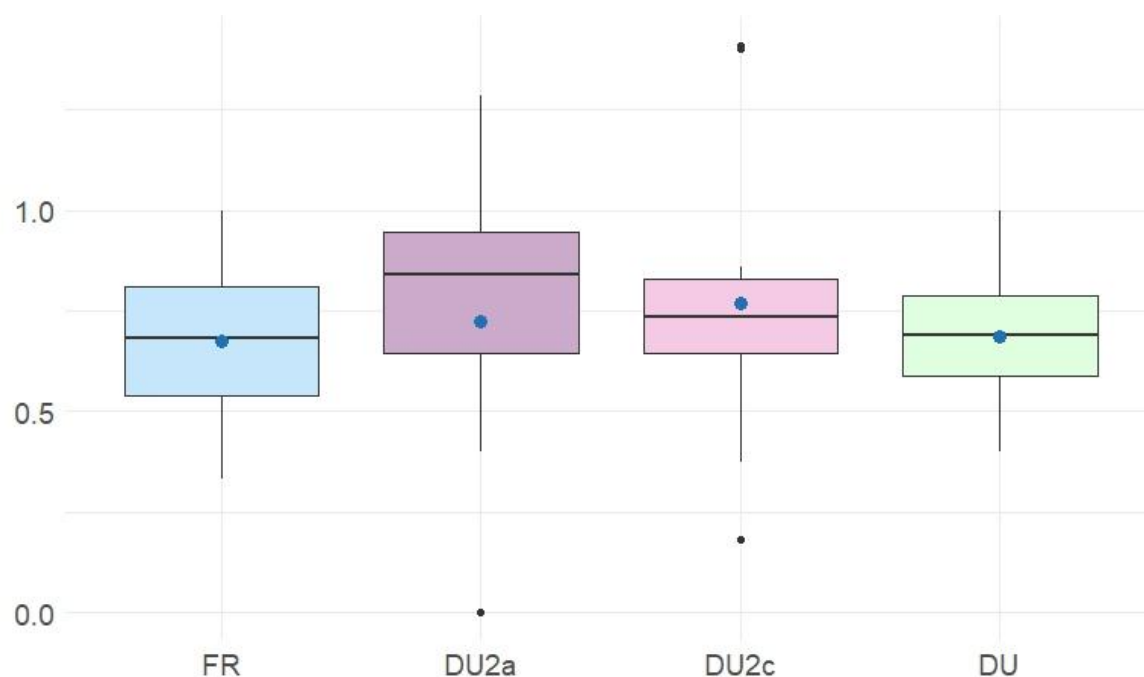


Figure 6.3.7: Number of path gestures per utterance (SPME)

In conclusion, the average number of path gestures in L1 French is similar to L1 Dutch but the proportion of path gestures in comparison to other semantic components is higher in L1 French than in L1 Dutch. In addition, L2 learners produced path gestures slightly more frequently than L1 speakers.

Figure 6.3.10 illustrates the combinations of gestures per utterance³². As we have seen earlier (see Section 5.2.3.2), participants made between one and six gestures per utterance when they described self-propelled motion events. All these combinations account for the variation represented in the figure. There are only three striking elements we can remember from this graph: (1) reality is very complex, (2) L1 French speakers and L1 Dutch speakers tend to produce one path gesture only (respectively in 48.21% and 47.50%) and learners tend to do so too but to a lesser extent (28.57% in DU2a and 25% in DU2c) and, (3) In contrast, learners tend to produce manner gestures only (25% in DU2c and 12.38% in DU2a) compared to 8.93% in L1 French and 6.5% in L1 Dutch. The other categories represent the combinations of all kinds of gestures: path, manner, location, ground, conflated gestures... Some gestures are repeated; some combinations only feature different gestures. There is no clear pattern drawn here. L1 speakers' gesture production tends not to exceed two gestures per utterance whereas learners' can go up to six.

For instance, Figure 6.3.8 and Figure 6.3.9 illustrate the two referential gestures that the participant produced in conjunction with a single utterance. The first one depicts path, i.e., Sylvester's trajectory from the pond to the ground. It co-occurred with the verb *vertrekken* [go away]. The second one conveys ground as it depicts the pond, and it was produced during an unfilled pause right after the participant uttered the ground.

³² My apologies for the font size, which is due to the size of the figure and the length of the legend.



Figure 6.3.8: Path gesture co-occurring with "<> de leeuw **vertrek** / van de water"
 (CLIL14c, ME87) [<> the lion goes away / from the water]



Figure 6.3.9: Ground gesture co-occurring with "<> de leeuw **vertrek** / van de water"
 (CLIL14c, ME87) [<> the lion goes away / from the water]



Figure 6.3.10: Combinations of gestures (SPME)

6.3.3. Viewpoint

In Figure 6.3.11, we can see the distribution of the viewpoints of the gestures used to describe self-propelled motion events. Most gestures are made from the observer viewpoint (87.81% in L1 Dutch, 83.90% in DU2a, 83.56% in L1 French (cf. Figure 6.3.5) and 71.06% in DU2c).

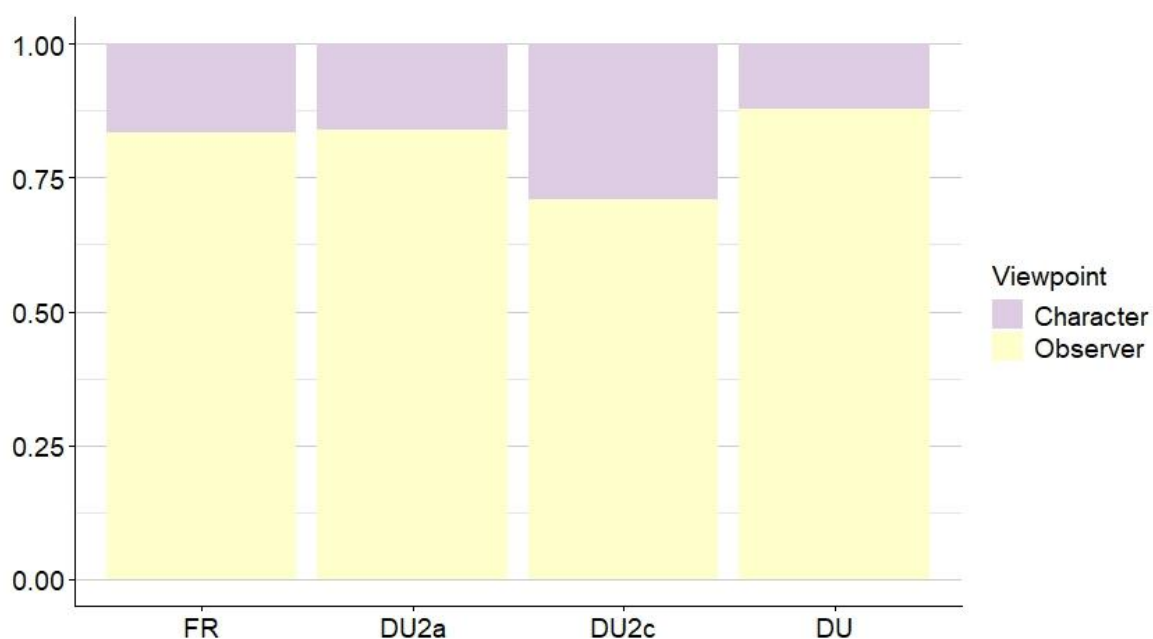


Figure 6.3.11: Gestural viewpoint across the four groups (SPME)

Figure 6.3.12 depicts the gestural viewpoint in relation to the semantic components encoded within referential gestures. The distribution across the four groups is similarly represented in this context. Character viewpoint gestures are manner gestures in 83.33% in DU2a, 81.01% in DU2c (cf. Figure 6.3.6), 73.53% in L1 Dutch and 75% in L1 French.

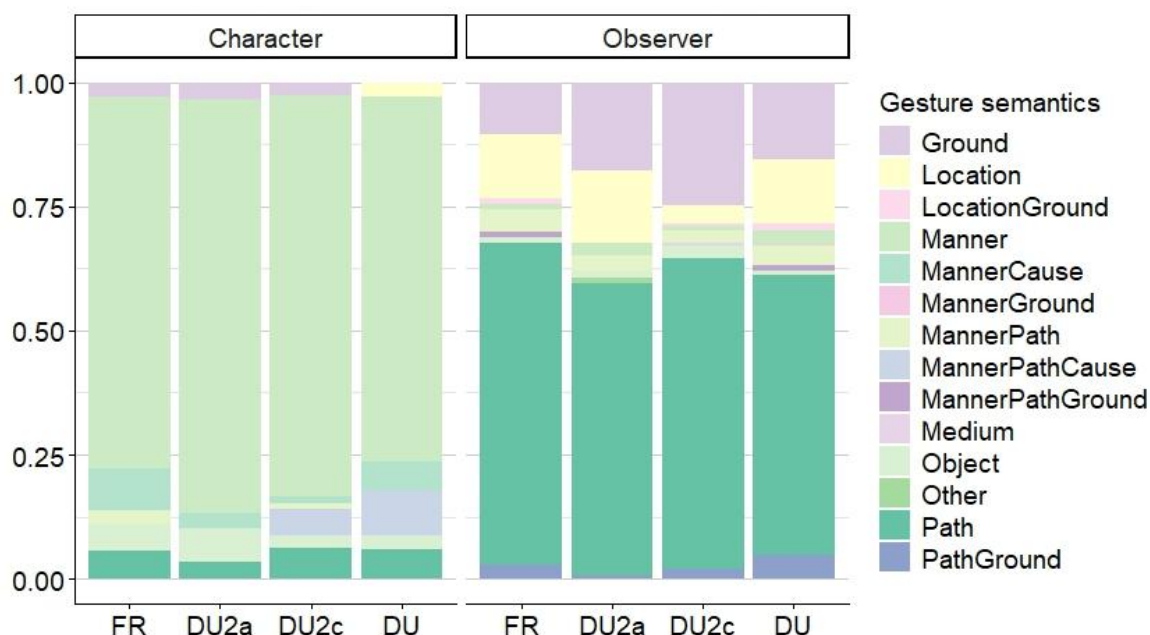


Figure 6.3.12: Gestural viewpoint per semantic component in gestures (SPME)

Observer viewpoint gestures are path gestures in 65.30% of cases in L1 French, 62.37% of cases in DU2c, 58.86% in DU2a and 56.33% in L1 Dutch, ground gestures in 24.74% of cases in DU2c, 17.72% in DU2a, 15.51% in L1 Dutch and 10.38% in L1 French. In addition, observer viewpoint gestures encoded location in 14.56% of cases in DU2a, 13.11% in L1 French, 13.06% in L1 Dutch and 3.61% in DU2c.

6.3.4. Boundary crossing gestures

Figure 6.3.13 shows that the gestures conveying path are non-boundary crossing in 97.4% of cases in L1 French, 97.3% in DU2a, 97.3% in DU2c and 98.4% in L1 Dutch.

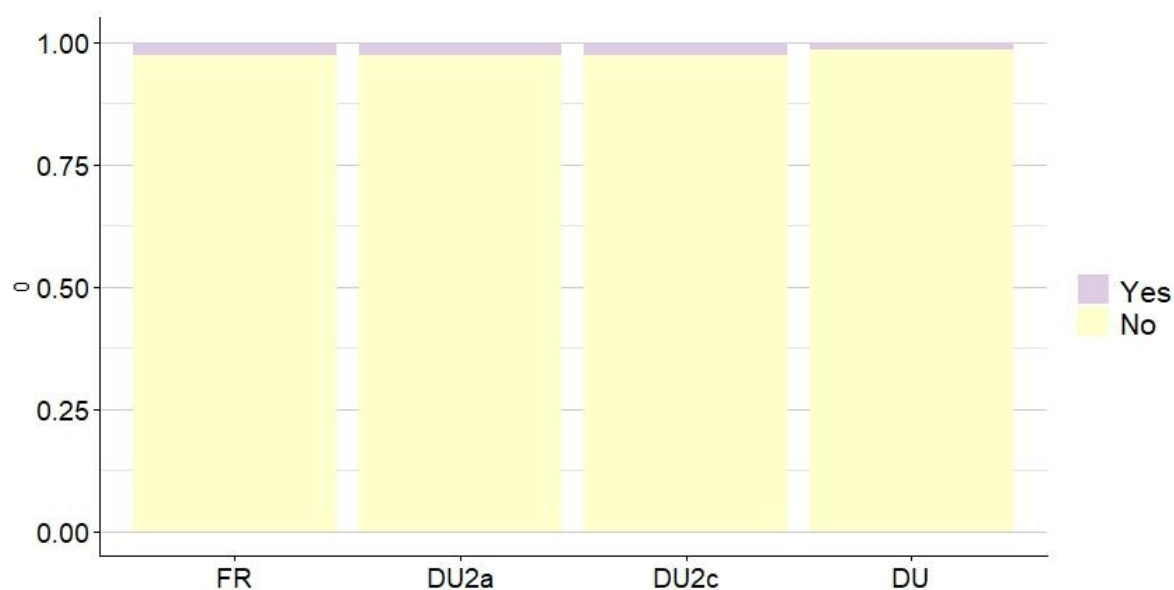


Figure 6.3.13: Boundary crossing gestures (SPME)

6.3.5. Synchronization

This section examines the synchronization between the gestures with the most frequent semantic components and speech units.

Figure 6.3.14 shows the speech units that aligned with path gestures in the four groups.

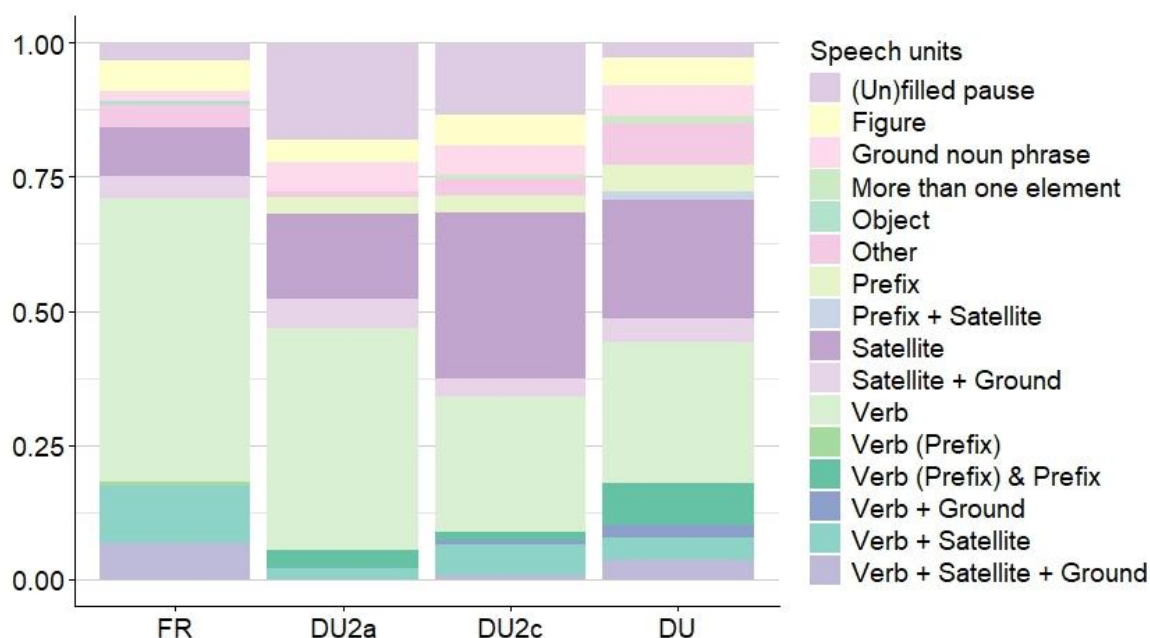


Figure 6.3.14: Distribution of the synchronization of path gestures (SPME)

In L1 French, path gestures (n=121) co-occurred with the verb in 53.72% of cases, with the verb and satellite in 10.74%, with the satellite in 9.09%, with the verb, satellite and ground in 6.61% with the figure in 5.79%, and with the satellite and ground in 4.13%.

In DU2a, path-gestures (n=94) accompanied the verb in 41.49%, a pause in 18.09%, the satellite in 15.96%, the satellite and ground in 5.32% and the ground noun phrase in 5.32% of cases.

In DU2c, path gestures (n=126) came with the satellite in 30.95% of cases, the verb in 25.40%, a pause in 13.49%, the ground noun phrase in 5.32% and the prefix of the verb in 3.17%.

In L1 Dutch, path-gestures (n=140) were produced at the same time the verb was uttered in 26.43% of cases, the satellite in 22.14%, the ground noun phrase in 5.71%, the verb and its prefix in 7.86% and the satellite and ground in 4.29%.

As path gestures co-occur both with the verb and satellite in L1 Dutch, I wondered if the verb semantics played a role. In other words, I wanted to investigate whether path gestures would co-occur with path verbs when there is one and with satellites when the utterance features a manner verb. Figure 6.3.15 and Figure 6.3.16 illustrate the speech units with which path gestures align respectively when the utterance features a path verb and a manner verb.

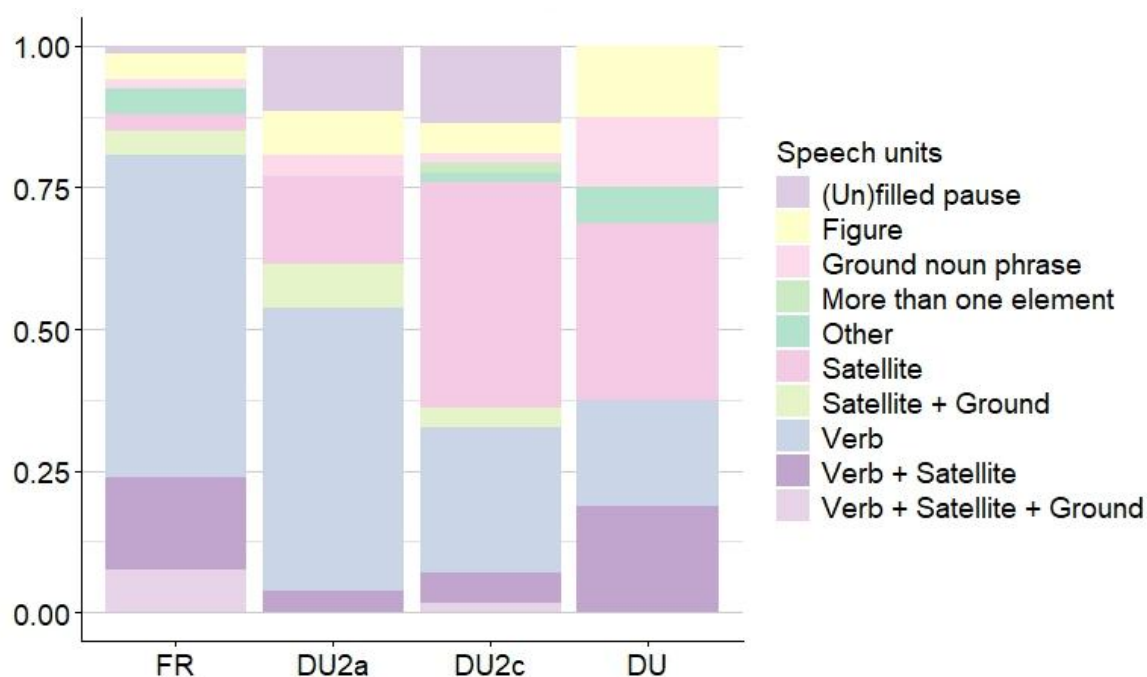


Figure 6.3.15: Synchronization of path gestures when the verb conveys path (SPME)

L1 Dutch speakers tend to produce path gestures when they utter the satellite even when the verb conveys path (31.25%). Path gestures co-occurred with the verb and with the satellite and verb both in 18.75% of cases. In contrast, L1 French participants made path gestures while uttering the verb (56.72%) and so did CLILa participants (50%). Only 14.38% of path gestures in DU2a co-occurred with the satellite. However, CLILc participants made path gestures while uttering the satellite in 39.66% and while saying the verb in 25.86%. This switch brings them closer to L1 Dutch speakers. Still, they still tend to make such gestures during pauses (11.54% in 2021 and 13.79% in 2023).

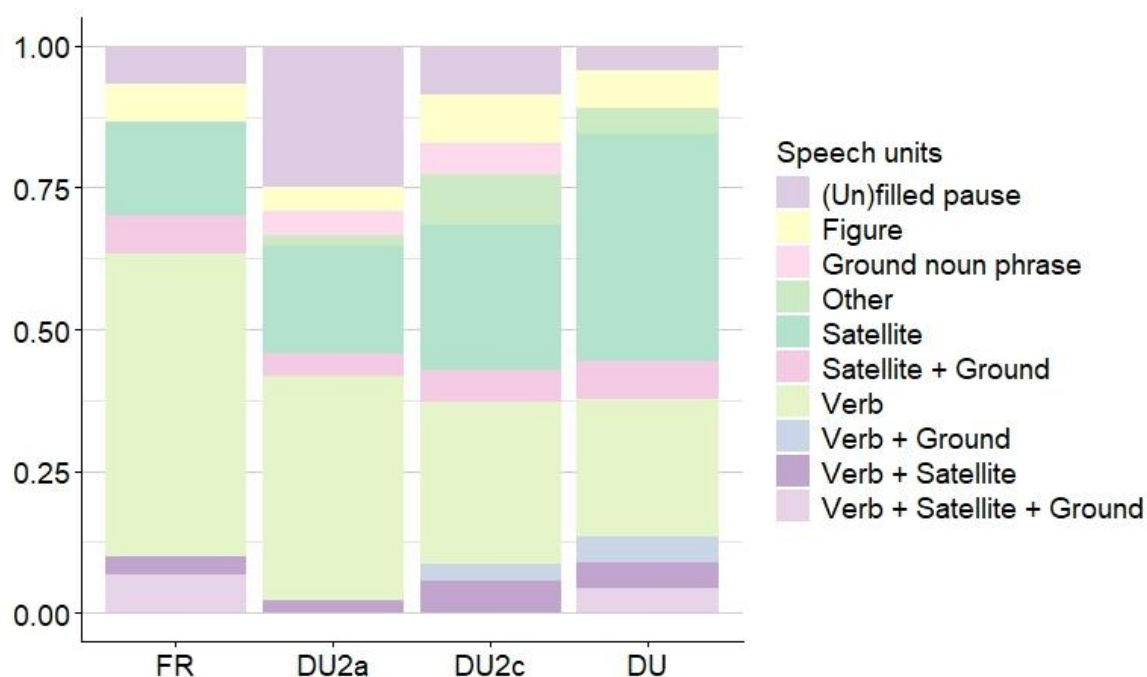


Figure 6.3.16: Synchronization of path gestures when the verb conveys manner (SPME)

When using a manner verb, L1 Dutch participants produced path gestures while uttering the satellite (in 40% of cases) and the verb (24.44%). In contrast, L1 French participants made path gestures while saying the verb in 53.33% of cases, and while uttering the satellite in 16.67%. L2 learners produced path gestures while uttering the verb in 39.58% of cases in 2021 and 28.57% in 2023. In addition, they produced path gestures while uttering the satellite in 18.75% of cases in 2021 and 25.71% in 2023. Here again, it seems that the learners' behaviors come closer to that of L1 Dutch speakers. Still, L2 learners also tend to produce such gestures while uttering other speech units more frequently than L1 speakers.

Figure 6.3.17 depicts the distribution of the synchronization of manner gestures across the four groups.

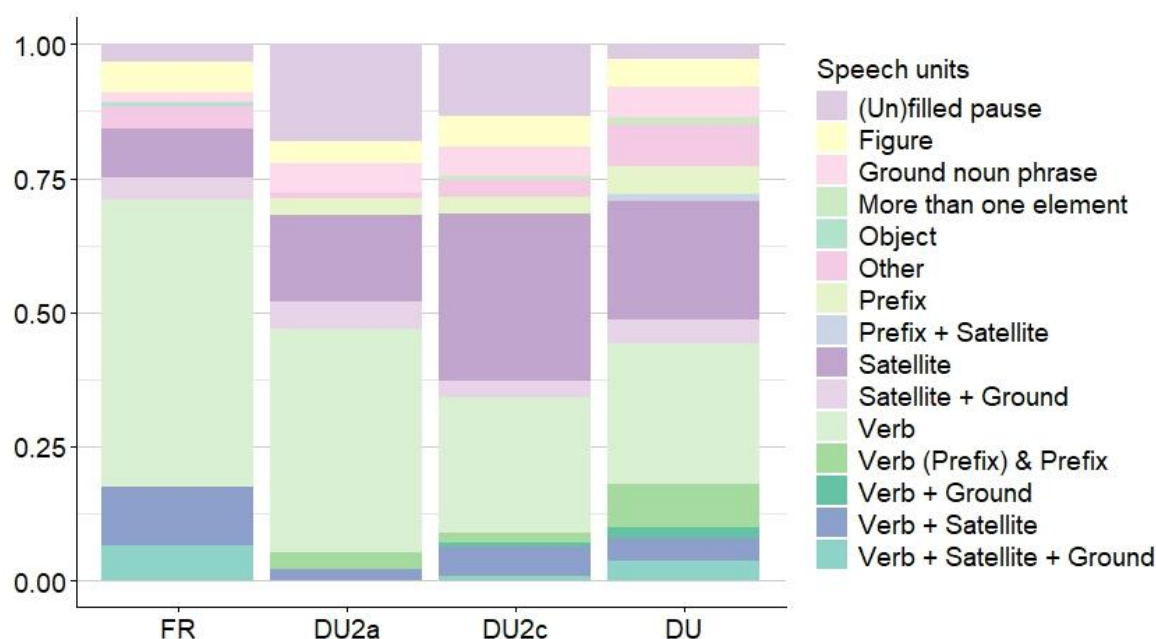


Figure 6.3.17: : Distribution of the synchronization of manner gestures (SPME)

Manner gestures ($n=32$ in L1 French, $n=31$ in DU2a, $n=71$ in DU2c and $n=36$ in L1 Dutch) co-occurred with the verb in 66.67% of cases in DU2c, 54.62% in DU2a, 46.88% in L1 Dutch and 44.83% in L1 French. In addition, they were produced at the same time as satellites in 15.63% of cases in L1 Dutch, 6.90% in L1 French, 4.55% in DU2c and 3.45% in DU2a. L2 learners also made manner gestures during pauses (17.24% in DU2a and 10.61% in DU2c).

Figure 6.3.18 shows the distribution of the synchronization of manner-path gestures. This analysis should be interpreted cautiously as there are few gestures per group (9 in L1 French, 5 in DU2a, 6 in DU2c and 9 in L1 Dutch). In French, 44.44% of the manner-path gestures co-occurred with the verb, 22.22% with the satellite and ground, 22.22% with the verb and satellite and 11.11% with the verb, satellite and ground. In DU2a, all manner-path gestures accompanied the verb. In DU2c, the participants made manner-path-gestures with the verb in 83.33% of cases. Lastly, in L1 Dutch, manner-path gestures came with the verb in 44.44%, the figure in 22.22%, the verb and satellite in 11.11% and the verb and prefix in 11.11%.

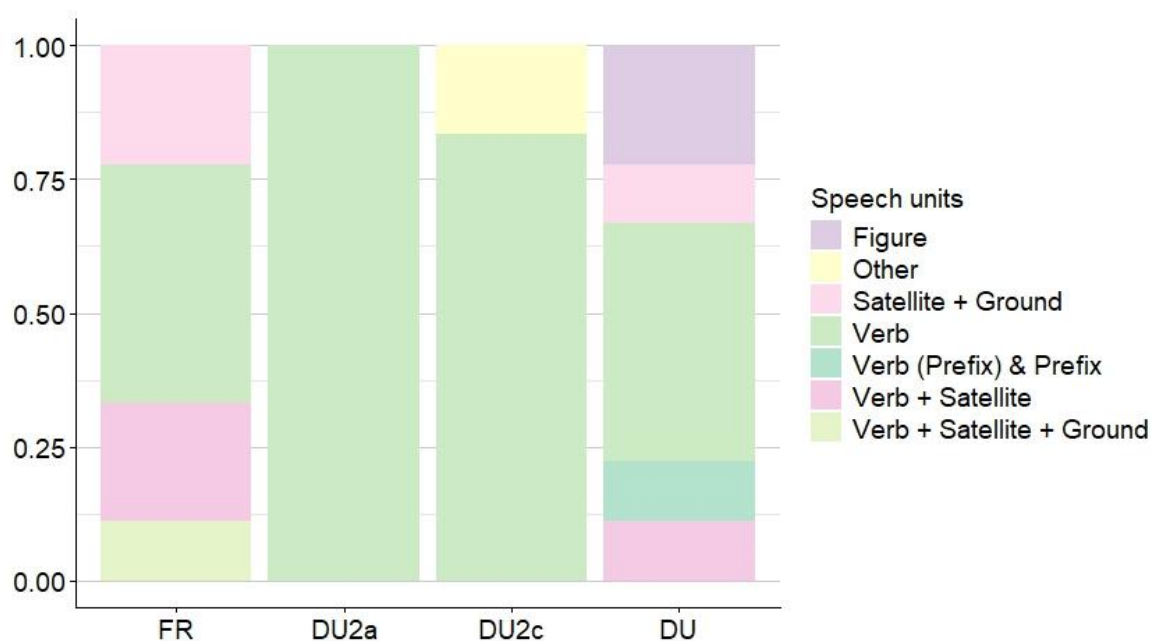


Figure 6.3.18: Distribution of the synchronization of manner-path gestures (SPME)

The distribution of the synchronization of ground gestures (n=20 in L1 French, n=29 in DU2a, n=50 in DU2c and n=38 in L1 Dutch) is illustrated in Figure 6.3.19. Ground gestures co-occurred with the ground noun phrase in most cases (65% in L1 French, 72.41% in DU2a, 61.22% in DU2c and 84.21% in L1 Dutch).

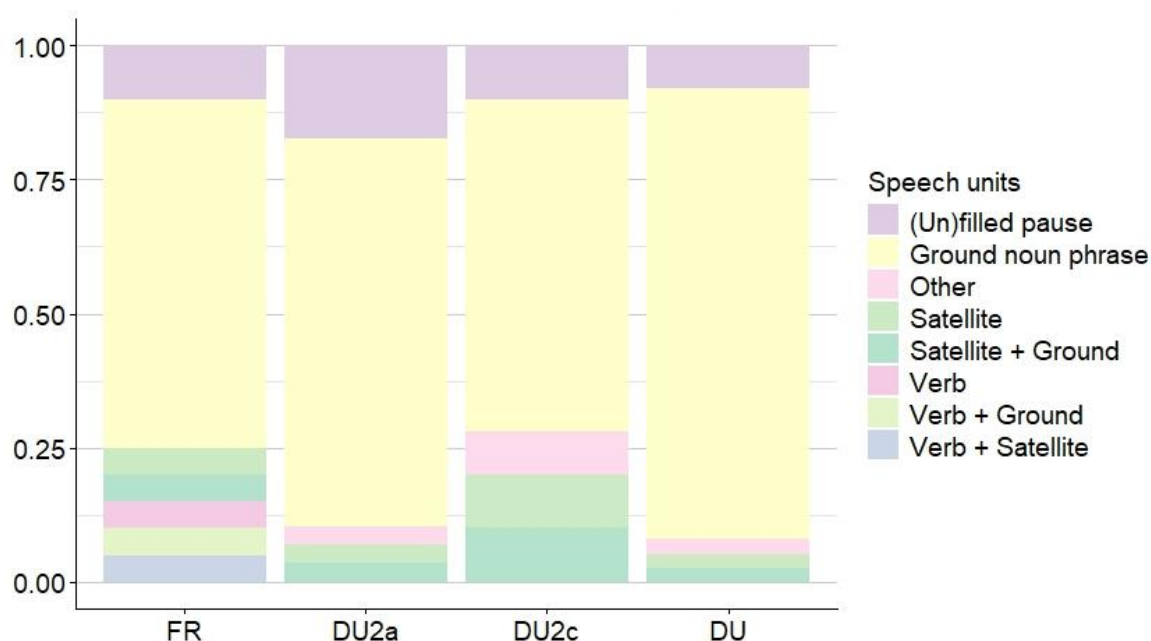


Figure 6.3.19: Distribution of the synchronization of ground gestures (SPME)

They were also produced during the utterance of the satellite and ground (5% in L1 French, 3.45% in DU2a, 10.20% in DU2c and 2.63% in L1 Dutch) and a pause (10% in L1 French, 17.24% in DU2a, 10.20% in DU2c and 7.89% in L1 Dutch).

Lastly, the distribution of the synchronization of location gestures used in the descriptions of self-propelled motion events ($n=24$ in L1 French, $n=23$ in DU2a, $n=7$ in DU2c and $n=33$ in L1 Dutch) is shown in Figure 6.3.20.

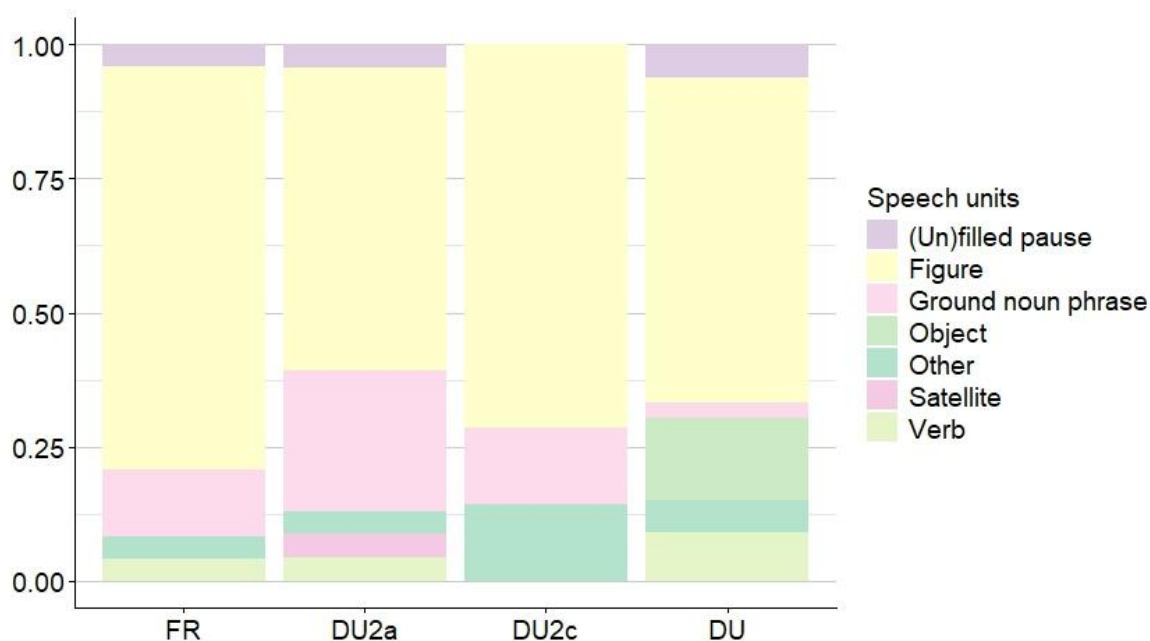


Figure 6.3.20: Distribution of the synchronization of location gestures (SPME)

Location gestures tend to co-occur with the figure (75% of cases in L1 French, 71.43% in DU2c, 60.61% in L1 Dutch and 56.52% in DU2a). In addition, such gestures also accompanied the ground noun phrase (26.09% in DU2a, 14.29% in DU2c, 12.50% in L1 French and 3.03% in L1 Dutch).

6.3.6. Multimodal picture

Figure 6.3.21 presents the semantic components encoded in the speech (Sp) and gestures (G) of the descriptions of self-propelled motion events. These categories only take manner and path into account in speech. The categories that appear on the graph occur at least ten times in the dataset and represent 501 occurrences out of 632. The combinations that occurred less frequently are included in the category “other” for readability reasons.

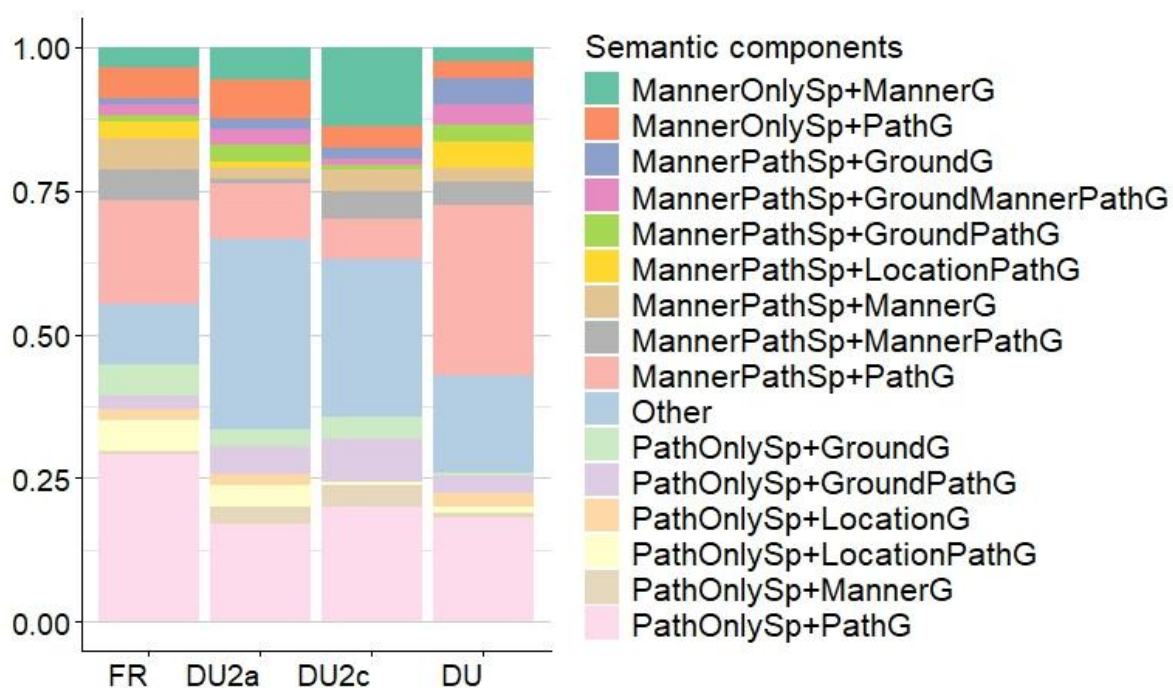


Figure 6.3.21: Distribution of the semantic components in speech and gesture (SPME)

L1 French speakers tend to focus on path only (29.17%, cf. Figure 6.3.5) whereas L1 Dutch speakers tend to encode both manner and path in speech and make path gestures (29.50%). L1 French participants also did so in 17.86% of cases, and they expressed manner and path in speech together with a manner gesture in 5.36% of cases and path in speech with a ground gesture in 5.36% of cases. L1 Dutch participants expressed only path in 18% and manner and path in speech together with a ground gesture in 4.50%. Manner and path both in speech and gesture occur only in 4% of cases in L1 Dutch and 5.36% in L1 French.

CLILa participants expressed only path in 17.14% of cases, manner and path in speech and path in gestures in 9.52%, manner in speech and path in gesture in 6.67%, manner only in both speech and gestures in 5.71%. CLILa expressed manner and path in both speech and gestures only in 0.95 % of cases.

CLILc participants described only path in 20%, manner and path in speech and path in gestures in 6.88%, only manner in 13.75% (cf. Figure 6.3.6), path in speech and ground in gestures in 3.75%, path in speech together with path and ground in gestures in 7.50% (cf. Figure 6.3.8 and Figure 6.3.9) and manner and both in speech and gesture in 5% of cases.

Let us now have a closer look at the distribution of semantic components among the speech units and how these are combined with the gestures' semantic components (see Figure 6.3.22). Because of the numerous combinations identified in the data and for readability reasons, only the multimodal constructions that occur at least four times in the data were selected for the current analysis, which represent 357 out of 633.

Similarly to Figure 6.3.10, the figure below illustrates how complex reality is. In fact, there are many ways in which verbs (V), satellites (S) and gestures (G) are combined. In French, the most frequent combination is a path verb, with a path satellite and a path gesture (14.88%) followed by a path verb with a path gesture (10.71%). In L1 Dutch, the most frequent combination is a manner verb with a path satellite and a path gesture (8.50%) followed by a path verb with a prefix and a path gesture (6.50%). In DU2a, the combinations that occurred the most frequently are a path verb with a path satellite and a path gesture and a manner verb with a path gesture, both in 5.71% of cases. Lastly, in DU2c, the two most frequent multimodal construction are a manner verb with a manner gesture (13.75%) and a path verb with a path satellite and a path gesture (10.63%).

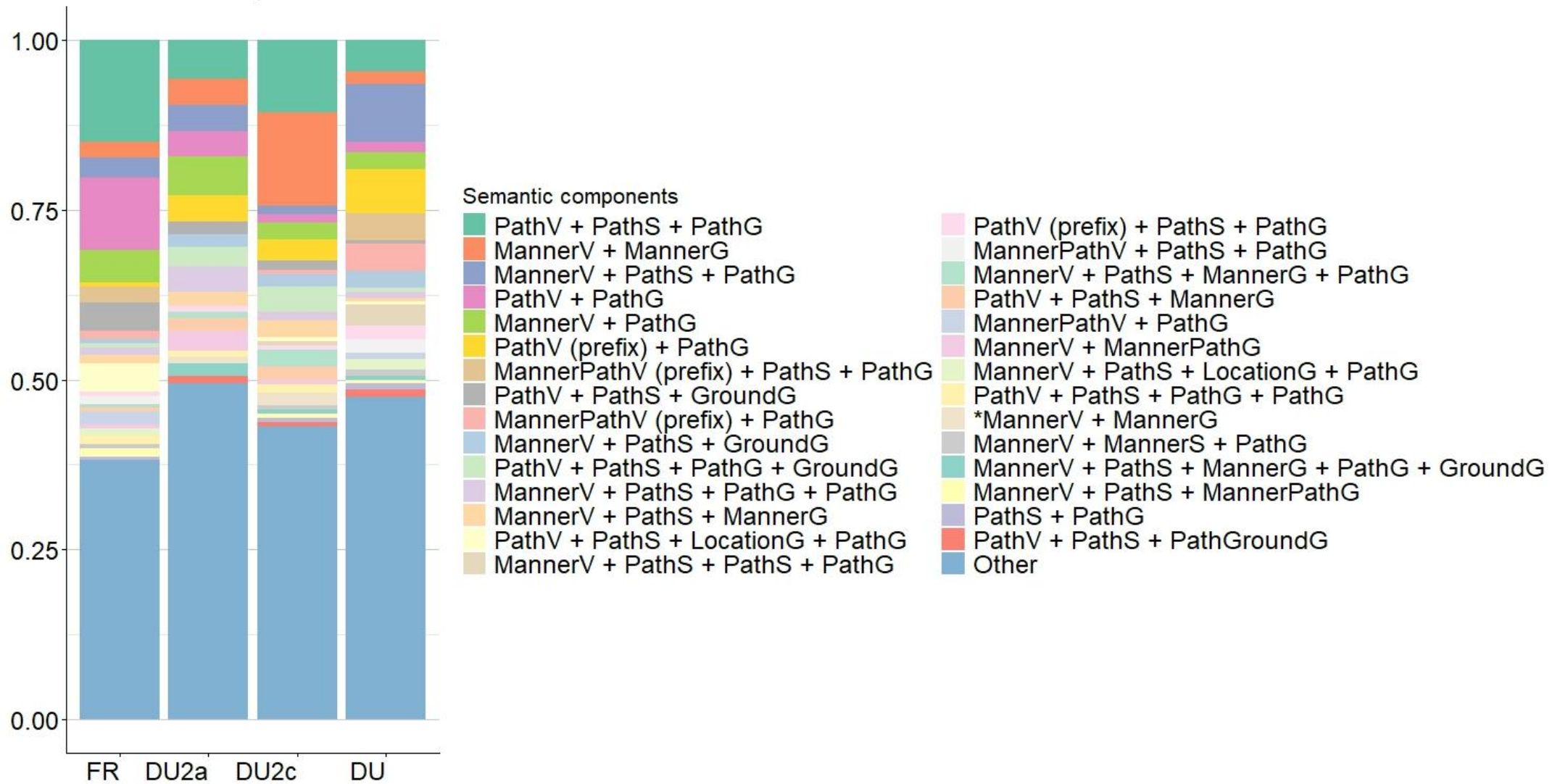


Figure 6.3.22: Distribution of the semantic components in verbs, satellites and gestures across the four groups (SPME)

6.3.7. Zoom in on CLIL learners

CLIL learners produced between 2 and 46 referential gestures each in 2021 and between 3 and 55 in 2023 to describe self-propelled motion events as illustrated in Table 6.3.1.

	2021	2023	Evolution (x) ($n_{2023} = n_{2021} * x$)
CLIL1	21	33	1.57
CLIL2	17	22	1.29
CLIL3	2	14	7
CLIL5	38	3	0.079
CLIL6	9	29	3.22
CLIL7	46	42	0.91
CLIL9	13	5	0.38
CLIL10	7	10	1.43
CLIL12	26	33	1.27
CLIL13	8	13	1.62
CLIL14	14	55	3.93
CLIL15	4	14	3.5
Total	205	273	1.33

Table 6.3.1: Number of referential gestures per CLIL learner in 2021 and 2023 (SPME)

On the one hand, there are a few extreme cases where the numbers of gestures in 2021 were multiplied by more than three or divided by more than ten. On the other hand, there are cases where the numbers of gestures in 2023 fluctuated between 0.91 times and 1.62

times the numbers of gestures in 2021. These numbers are presented here mostly to give an overview of the samples that are used in Figure 6.3.23 and Figure 6.3.24.

Figure 6.3.23 shows the semantic components encoded in the referential gestures of each learner in 2021 and 2023.



Figure 6.3.23: CLIL learners' gesture semantics in 2021 and 2023 (SPME)

Nine learners produced more gestures while describing self-propelled motion events in 2023 than in 2021 while three made fewer.

CLIL1, CLIL6, CLIL12, CLIL13 and CLIL14 made more manner gestures in 2023 than they did in 2021. CLIL2, CLIL3, CLIL7, CLIL9, CLIL12 and CLIL14 made more path gestures in 2023 than in 2021. Concerning manner-path gestures, they were found in the data of CLIL1 in 2021, CLIL2 in 2023, CLIL5 in 2021, CLIL7 both in 2021 and 2023, CLIL12 both in 2021 and 2023 and CLIL14 in 2023 but they always represent a very small proportion of the total amount of referential gestures of each participant.

In addition, most learners depicted ground in their gestures: CLIL14 is the one who did it most in 2023, and she already did it in 2021. CLIL5 (in 2021), CLIL6 (in 2023), CLIL7 (in 2021), CLIL12 (in 2023) and CLIL15 (in 2023) also depicted ground in their gestures, and so did CLIL1 (both in 2021 and 2023), CLIL2 (both in 2021 and 2023), CLIL3 (in 2023), CLIL7 (in 2023), CLIL10 (in 2021 and 2023) and CLIL13 (both in 2021 and 2023) but to a lesser extent.

Figure 6.3.24 illustrates the speech units with which path gestures co-occurred in L2 Dutch.

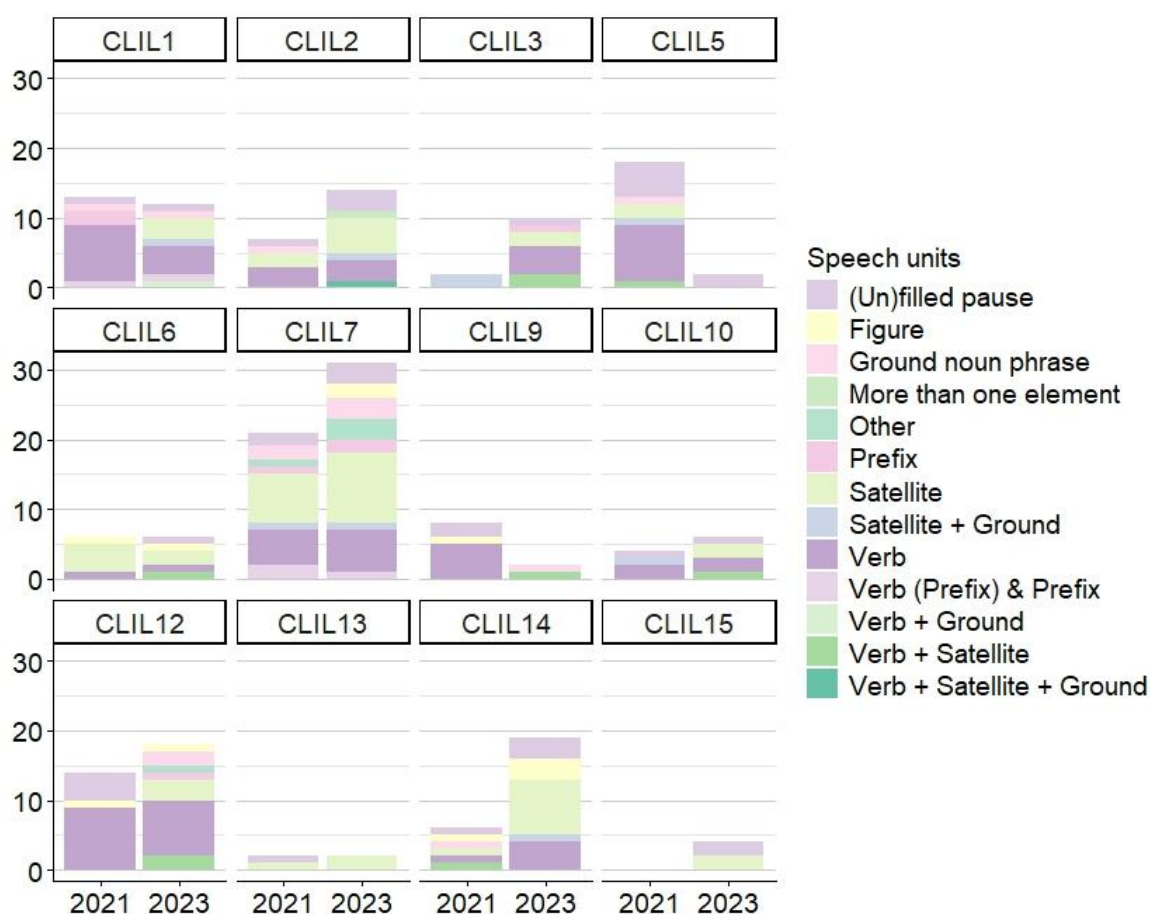


Figure 6.3.24: Synchronization of path gestures in DU2 in 2021 and 2023 (SPME)

Considerable variation is observed; however, learners typically produce path gestures concurrently with the articulation of the verb or the satellite. For instance, CLIL1's path gestures tended to co-occur with the verb in 2021 and with the verb or with the satellite in 2023. CLIL2, CLIL12 and CLIL14's path gestures co-occurred with the satellite more in 2023 than in 2021. Lastly, CLIL7's path gestures were mostly produced at the same

time as the satellite or the verb both in 2021 and 2023. Besides, they also accompanied other elements such as a pause or the ground noun phrase.

Figure 6.3.25 displays the speech units with which manner gestures co-occurred in L2 Dutch.

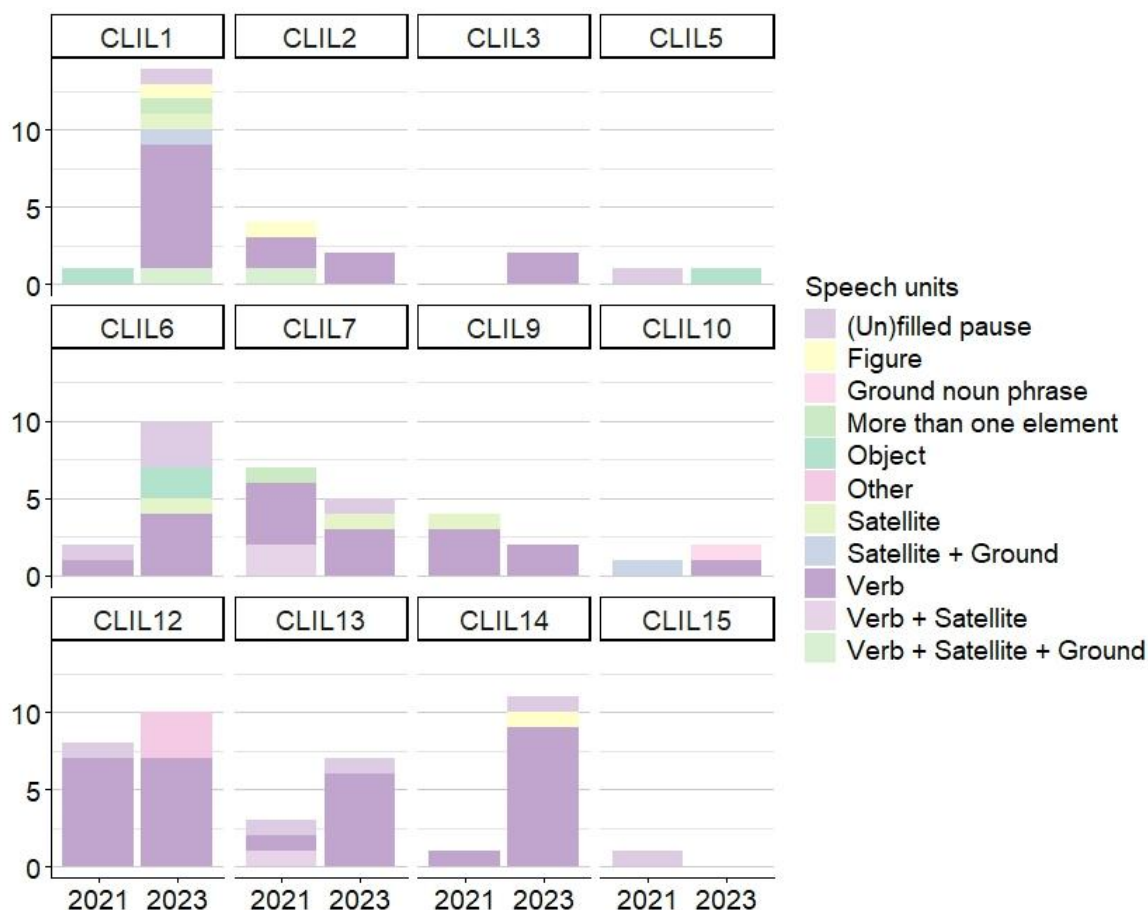


Figure 6.3.25: Synchronization of manner gestures in DU2 in 2021 and 2023 (SPME)

Most manner gestures co-occurred with the verb both in 2021 and 2023 except CLIL5's, CLIL10's and CLIL15's but there were very few occurrences.

6.3.8. Conclusion

This section has sketched the characteristics of the multimodal expression of self-propelled motion events in L1 French, L1 Dutch and L2 Dutch.

Regarding the types of gestures, iconic gestures were the most prevalent across all groups. Deictic gestures were more frequently used by L1 Dutch speakers, while pragmatic gestures were more common among L2 speakers, particularly in DU2a. L2

learners produced a higher number of referential gestures per utterance compared to L1 speakers; however, the only statistically significant difference was observed between L1 French speakers and CLILc learners.

All groups predominantly encoded path gestures. The average number of path gestures per utterance is comparable between L1 French and L1 Dutch speakers, with a higher frequency observed in L2 Dutch speakers. However, L1 speakers more frequently produced a single path gesture per utterance compared to L2 learners. Additionally, L2 learners, particularly in 2023, exhibited a higher frequency of manner gestures than L1 speakers, producing one more manner gesture per utterance in 2023 than in 2021, and more frequently than L1 speakers.

Most referential gestures were produced from the observer's viewpoint, primarily depicting path, location, and ground. In contrast, gestures made from the character's viewpoint predominantly illustrated manner, with CLILc being the most frequent producers of these gestures.

In French, path gestures typically co-occur with the verb, followed by the verb and satellite. In L1 Dutch, these gestures co-occur with the satellite almost as frequently as with the verb. CLILa learners produced their path gestures (1) while articulating the verb and (2) while articulating the satellite, whereas CLILc learners more frequently produced them when articulating the satellite rather than the verb. The analysis was further extended to examine the influence of verb semantics on the synchronization of path gestures. Path gestures co-occur more frequently with the satellite than with the verb when the utterance includes both a path verb and a manner verb, with a higher frequency in the latter case. In L1 French, path gestures generally co-occur with the verb in both scenarios; however, when a manner verb is present, they occur more frequently with the satellite than when a path verb is present, where they tend to co-occur with both the verb and satellite. In DU2a, path gestures predominantly co-occurred with the verb in both scenarios, particularly when the utterance featured a path verb. Finally, in DU2c, path gestures co-occurred with the satellite more frequently than with the verb when the description included a path verb, whereas the proportions were similar when accompanying an utterance featuring a manner verb.

Manner gestures were predominantly produced by the four groups during the articulation of the verb, with a higher frequency observed in L2 Dutch compared to L1 Dutch and French. Regarding ground gestures, these were typically produced concurrently with the articulation of the ground noun phrase and during (un)filled pauses, particularly in DU2a. Finally, location gestures co-occurred with the articulation of the figure across the four groups and with the ground noun phrase, notably in DU2a.

Upon examining the semantic components encoded in both speech and gestures, it becomes evident that L1 French speakers predominantly emphasize the path in their expressions, whereas Dutch speakers tend to articulate both path and manner in speech, while focusing on path in gestures. Although L1 French speakers also incorporate manner to some extent, this is less pronounced compared to L1 Dutch speakers, who similarly emphasize path but to a lesser degree than their French counterparts. CLILa learners generally encode path exclusively in both speech and gesture, while also integrating manner and path in speech accompanied by a path gesture. Conversely, CLILc learners primarily concentrate on path in both speech and gestures, yet they also focus solely on manner. Their third most frequent category involves the combination of manner and path in speech with a path gesture. It is crucial to acknowledge that the categories discussed here represent the most prevalent patterns; however, the actual scenario is considerably more complex.

Upon examining the semantic elements embedded within verbs, satellites, and gestures, we encounter the inherent complexity of reality once more. Still, we see that L1 French speakers tend to combine a path verb with a path satellite and a path gesture followed by a path verb and a path gesture. In contrast, L1 Dutch speakers tend to pair (1) a manner verb with a path satellite and a path gesture and (2) a path verb with a prefix accompanied by a path gesture. CLILa learners combined a path verb with a path satellite, and a path gesture the most often followed by a manner verb accompanied by a path gesture. Conversely, CLILc learners preferred combining a manner verb with a manner gesture followed by a path verb with a path satellite and a path gesture. Overall, it is evident that L2 learners predominantly used the most common pattern observed in L1 French. Additionally, they exhibit distinct behavior by either focusing solely on manner or by omitting path in speech, instead of conveying path information through gestures.

6.4. Intentional caused motion events

This section examines how intentional caused motion events are expressed in gestures and then in speech and gestures altogether. Section 6.4.1 looks at the types of gestures used in the descriptions of self-propelled motion events, Section 6.4.2 analyzes the semantic components encoded in gestures, Section 6.4.3 elaborates on gesture viewpoints, Section 6.4.4 delves into the synchronization between speech and referential gestures and Section 6.4.5 explores the semantic components encoded in speech and gestures altogether. Finally, Section 6.4.6 zooms in on CLIL learners and Section 6.4.7 provides some concluding remarks.

6.4.1. Gesture types

The types of gestures used in the descriptions of intentional caused motion events are presented in Figure 6.4.1.

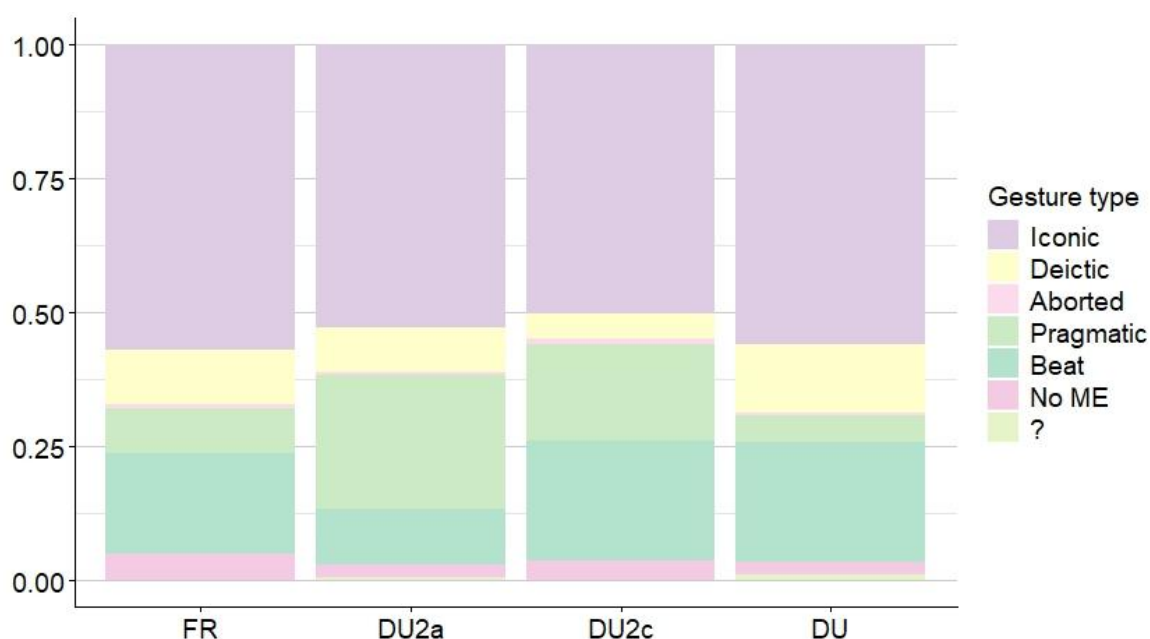


Figure 6.4.1: Distribution of gesture types across the four groups (ICME)

Iconic gestures (n=455) are the most often produced type of gestures in all groups (56.97% in French (n=94), 52.77% in DU2a (n=124), 50.18% in DU2c (n=273) and 55.87% in L1 Dutch (n=179)). Deictic gestures (n=73) represent 12.85% of the gestures in L1 Dutch (n=23), 10.30% in L1 French (n=17), 8.51% of the gestures in DU2a (n=20) and 4.76 in DU2c (n=13). Concerning non-referential gestures, beats (n=156) were

identified in 25.35% of cases in L1 Dutch (n=40), 22.34% in DU2c (n=61), 18.79% in L1 French (n= 31) and 10.21% in DU2a (n=24). Pragmatic gestures (n=131) were made in DU2a in 25.11% of cases (n=59), DU2c 17.95% (n=49), L1 French 8.48% (n=14) and L1 Dutch 5.03% (n=9).

Figure 6.4.2 compares the number of utterances and referential gestures used to describe intentional caused motion events.

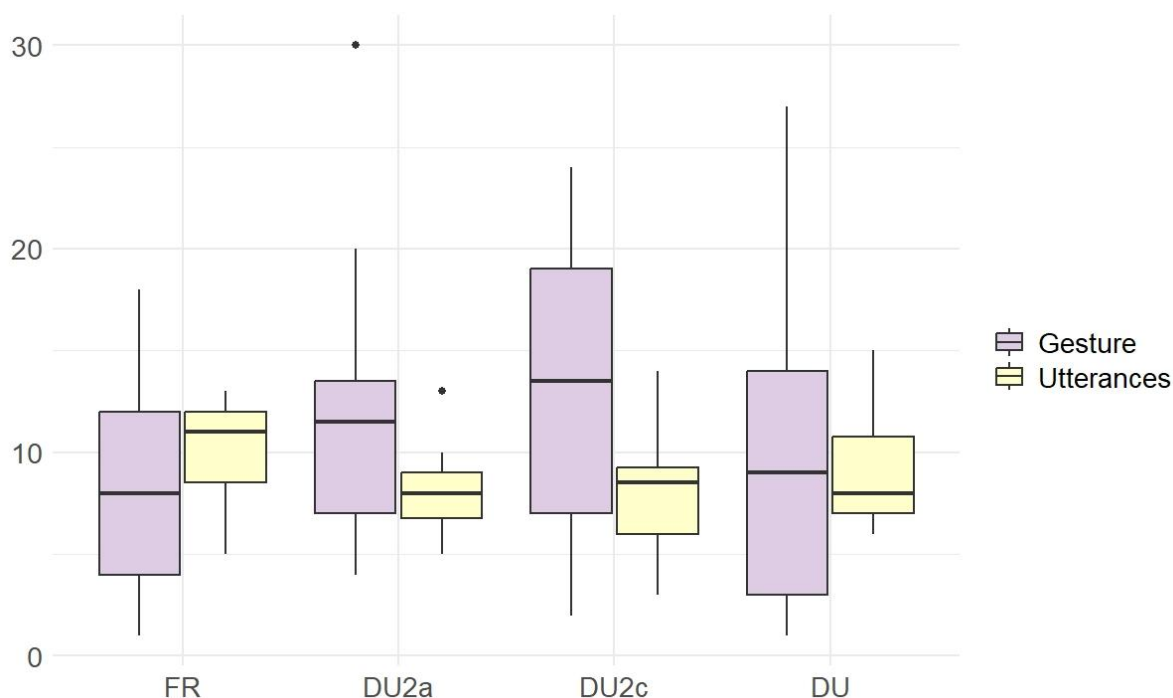


Figure 6.4.2: Distribution of utterances and referential gestures across the four groups (ICME)

L1 French speakers produced between six and 13 utterances (M=10.53, SD=2.30, Mdn=11) and between one and 18 gestures (M= 8.53 gestures, SD=5.52, Mdn=8).

CLILa participants uttered between five and 13 descriptions (M=8.17, SD=2.12, Mdn=8) and made between four and 30 gestures (M=12, SD=7.25, Mdn=11.5)

CLILc participants made between three and 14 utterances (M=7.83, SD=3.01, Mdn= 8.5) and between two and 24 gestures (M=12.5, SD= 7.33, Mdn=13.5).

L1 Dutch participants produced between six and 16 utterances (M=8.92, SD=2.75, Mdn= 8) and between one to 27 gestures (M=9.46, SD=7.64, Mdn=9).

Overall, as can be seen in Figure 6.4.3, L1 French participants made a mean of 0.79 gesture per utterance, CLILa 1.38, CLILc 1.53 and L1 Dutch 0.98. As the data was normally distributed, a one-way ANOVA was conducted to examine the effect of language on ratio. There was a significant effect of language, $F(3, 46) = 4.35$, $p = 0.0088$, $\eta^2 = 0.22$, indicating that language accounted for approximately 22% of the variance in ratio. Post-hoc Tukey tests revealed that DU2c had a significantly higher ratio than L1 French ($p=0.014$). No other pairwise comparisons were significant.

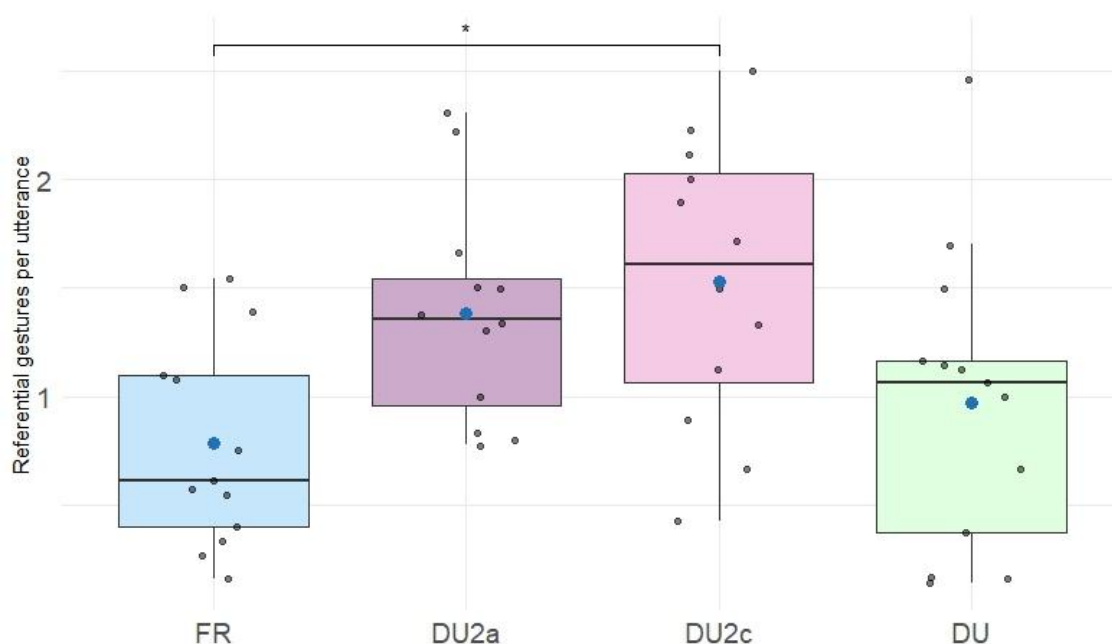


Figure 6.4.3: Number of referential gestures per utterance (ICME)

6.4.2. Gesture semantics

When they described intentional caused motion events, L1 French speakers made manner-path-cause gestures in 50.45%, manner-cause gestures in 20.72% and path gestures in 17.12% (see Figure 6.4.4).



Figure 6.4.4: Gesture semantics (ICME)

L1 Dutch speakers encoded manner, path and cause in gestures in 47.97%, path in 23.58% and manner and cause in 16.26%. Figure 6.4.5 illustrates a manner-path-cause gesture where the participant is holding the car and pushing it away from his body.



Figure 6.4.5: Manner-path-cause gesture co-occurring with "*duwt die koets verder*" (DU10, ME33) [pushes the carriage further]

L2 learners encoded manner, path and cause more often in 2023 than in 2021 (44.90% vs. 38.19%), manner and cause more often (29.25% vs. 22.92%) and path less often (respectively in 8.84% and 13.19% of cases). Figure 6.4.6 exemplifies a manner-cause gesture: the participant is showing how the zoo worker is riding the cart. In addition, L2

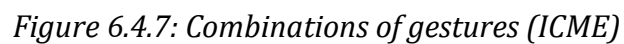
learners also tended to depict the object in their gestures (15.97% in DU2a and 8.16% in DU2c).



Figure 6.4.6: Manner-cause gesture co-occurring with "dus een <> / *een mens /% *een mens neemt de *de *de fiets" (CLIL13c, ME33) [so a <> /*a person /% *a person takes the *the *the bike]

Figure 6.4.7 shows how gestures were combined in one utterance by the different groups to describe intentional caused motion events.

Similarly to the observations made regarding self-propelled motion events, there exists considerable variation, particularly more pronounced in L2 than in L1, reflecting the complexity of reality. L1 speakers tended to make one gesture conflating manner, path and cause in 48.81% (French) and 48.89% (Dutch). L2 learners also did so but to a lesser extent (23.26% of cases in DU2a and 25.93% in DU2c). In addition, L2 learners also made one manner-cause gesture (19.77% in DU2a and 18.52% in DU2c). In L1 French, manner-cause gestures represent 14.29% and in L1 Dutch 6.67%. Lastly, L1 Dutch speakers made one path gesture in 16.67% of cases in comparison to 5.95% of cases in French, 5.81% in DU2a and 4.94% in DU2c.



6.4.3. Viewpoint

Figure 6.4.1 shows the gestural viewpoint adopted by the participants to describe intentional caused motion events. Gestures were produced from the character viewpoint in 77.48% of cases in L1 French, 69.44% in DU2a, 82.99% in DU2c and 65.85% in L1 Dutch.

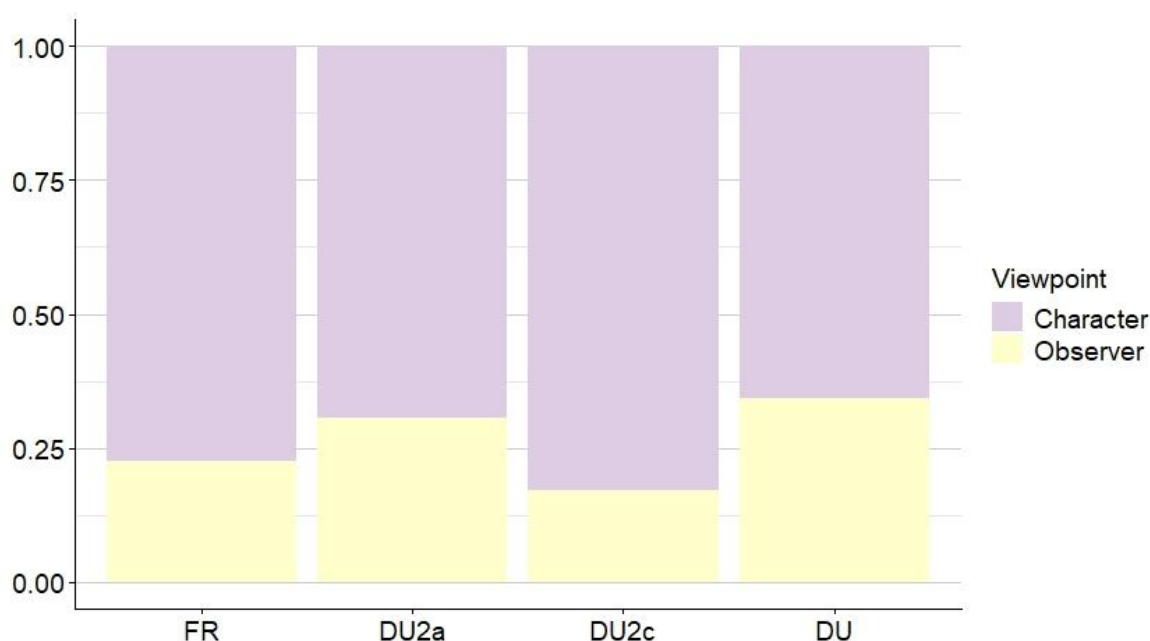


Figure 6.4.8: Gestural viewpoint across the four groups (ICME)

Figure 6.4.8 presents the gestural viewpoint in relation to gesture semantics. In L1 French, gestures from the character viewpoint (n=86) expressed manner, path and cause in 65.12% and manner and cause in 26.74%. In DU2a (n=100), they expressed manner, path and cause in 55% and manner and cause in 32%. The proportions in DU2c (n=122) are similar to the ones in DU2c (54.10% and 35.25%) while the proportions in L1 Dutch (n=81) are similar to the ones in French (70.37% and 24.69%).

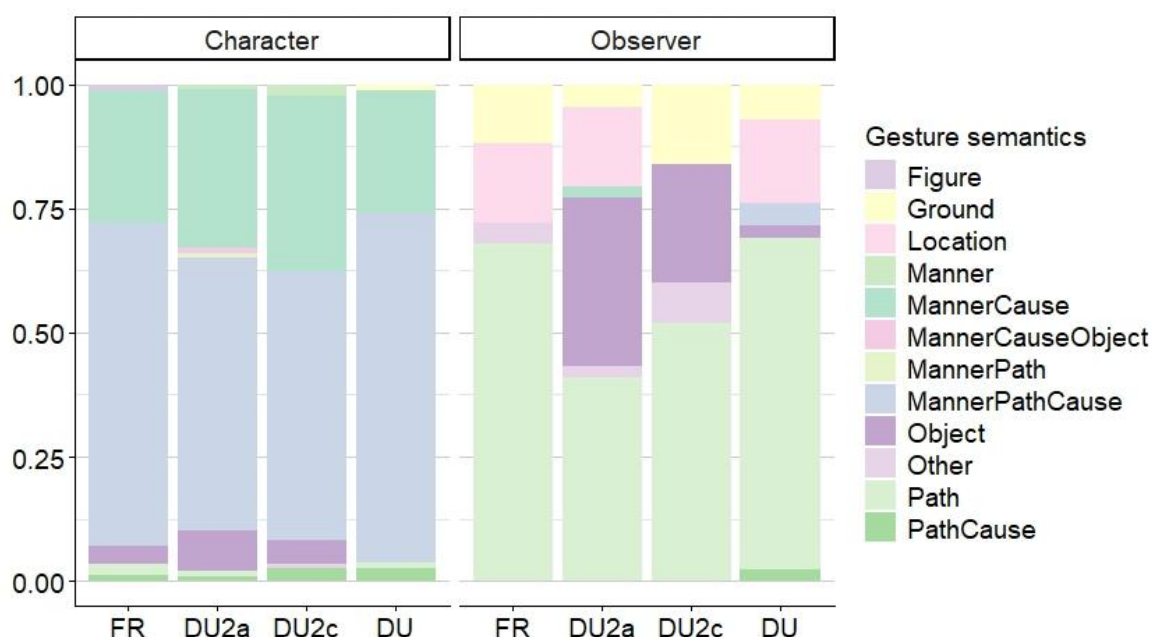


Figure 6.4.9: Gestural viewpoint per semantic component in gestures (ICME)

Observer viewpoint gestures ($n=136$) depict path in 68% of cases in L1 French, 40.91% in DU2a, 52% in DU2c and 66.67% in L1 Dutch. In addition, these gestures are used to locate entities in 16% of cases in L1 French, 15.91% in DU2a and 16.67% in L1 Dutch and to illustrate ground in 12% in L1 French, 4.55% in DU2a, 16% in DU2c and 7.14% in L1 Dutch.

6.4.4. Synchronization

This section examines the speech units with which the most frequent gestures co-occur.

Figure 6.4.10 displays the synchronization of manner-path-cause gestures ($n=236$). In L1 French, these gestures tend to co-occur with the verb (71.43%) whereas in L1 Dutch they only do so in 30.51% of cases. In fact, they were also produced when the object was uttered (13.56%) and the ground noun phrase (8.47%) were uttered. In L2 Dutch, manner-path-cause gestures accompanied the verb (34.55% in DU2a and 25.76% in DU2c), a filled pause (23.64% in DU2a and 13.64% in DU2c), the object 14.55% in DU2a, 19.70% in DU2c) or other elements (18.18% in DU2c).

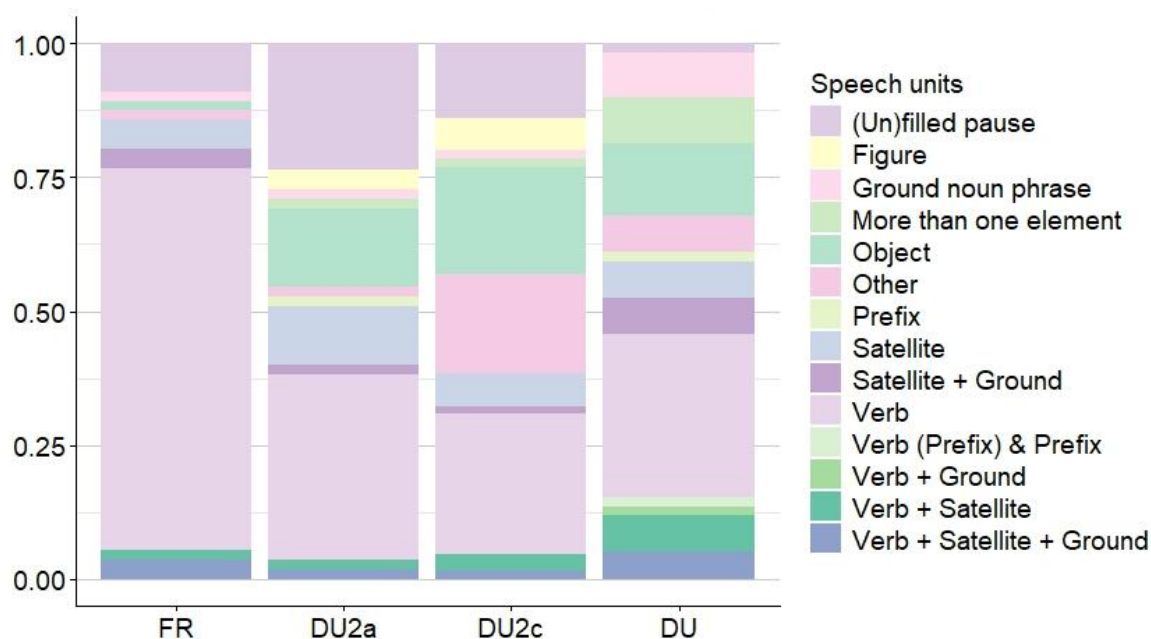


Figure 6.4.10: Distribution of the synchronization of manner-path-cause gestures (ICME)

Figure 6.4.11 shows that manner-cause gestures ($n=119$) co-occurred with the verb in 60.87% of cases in French, in 72.73% in DU2a, in 55.59% in DU2c and in 40% in L1 Dutch. Besides, these gestures co-occurred with a pause in 20.93% of cases in DU2c and 20% in L1 Dutch and with the object in 8.70% in L1 French, 12.12% in DU2a, 16.28% in DU2c and 5% in L1 Dutch.

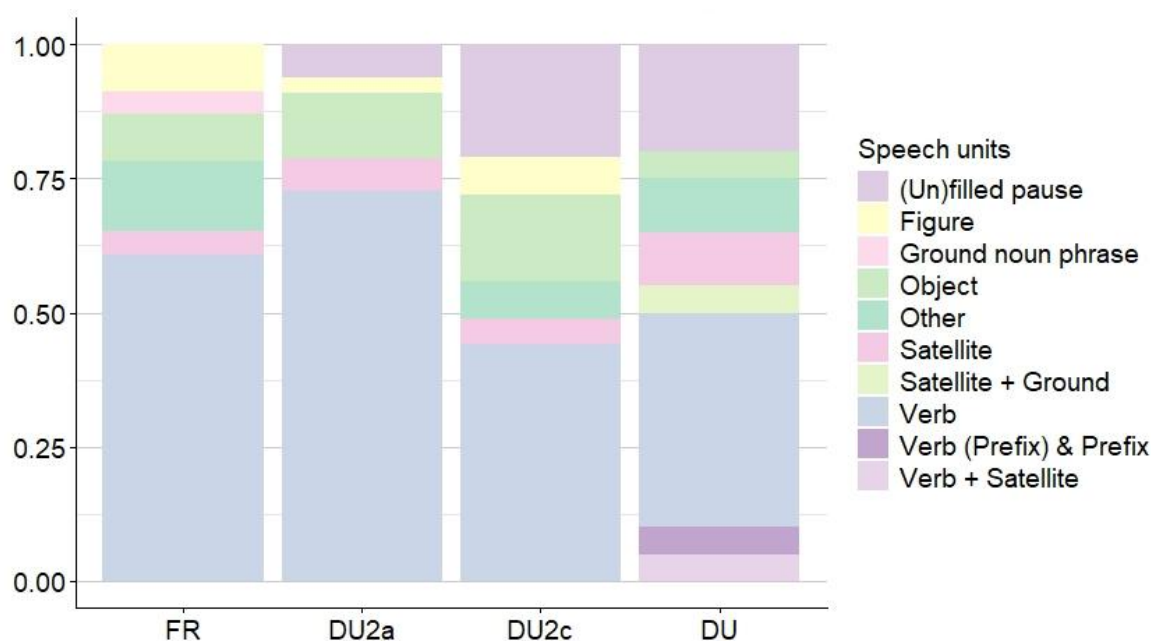


Figure 6.4.11: Distribution of the synchronization of manner-cause gestures (ICME)

Figure 6.4.12 presents the speech units that co-occurred with path gestures ($n=80$). In L1 French, path gestures were produced together with the verb in 47.37%, with the satellite and ground, the object, and the satellite each in 10.53%. In DU2a, path gestures co-occurred with the satellite in 44.44%, with the ground noun phrase in 16.67% and with the object and a pause each in 11.11%. In DU2c, path gestures accompanied the satellite in 30.77% of cases and the verb and a pause both in 23.08%. Lastly, in L1 Dutch, these verbs co-occurred with the verb (20.69%), the satellite (20.69%) and with the satellite and ground (13.79%). These data need to be interpreted carefully as the number of occurrences per group is limited.

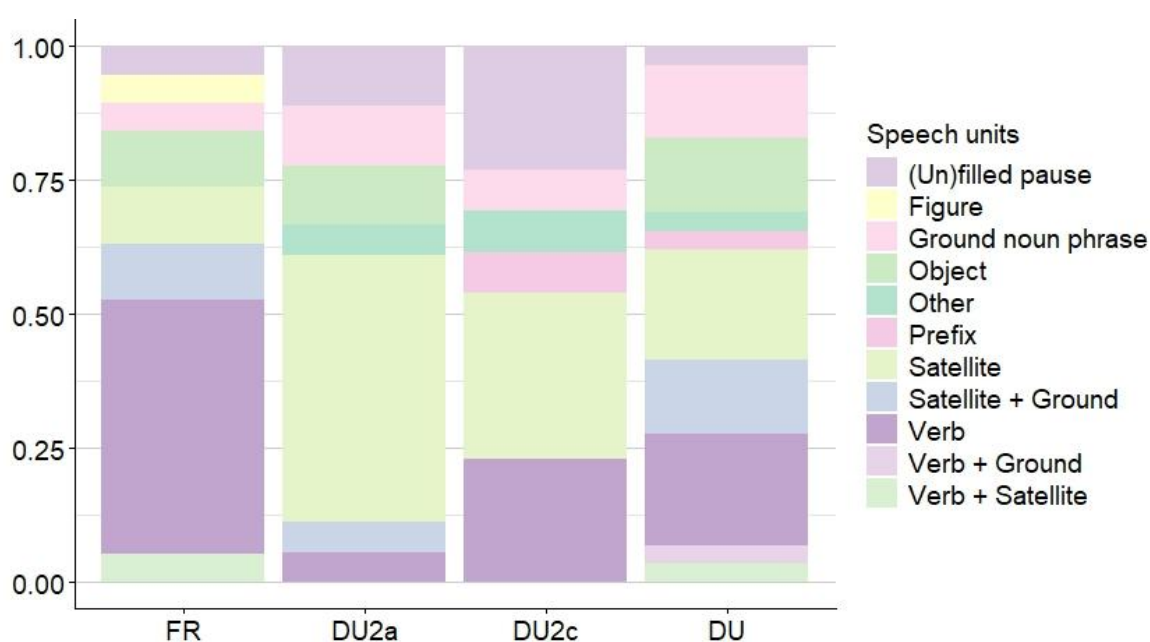


Figure 6.4.12: Distribution of the synchronization of path gestures (ICME)

6.4.5. Multimodal picture

Figure 6.4.13 shows the combinations of speech (Sp) and gestures (G) to describe intentional caused motion events that occurred at least five times in the dataset (258 cases out of 340). The categories that count fewer than five occurrences are included in “other”.

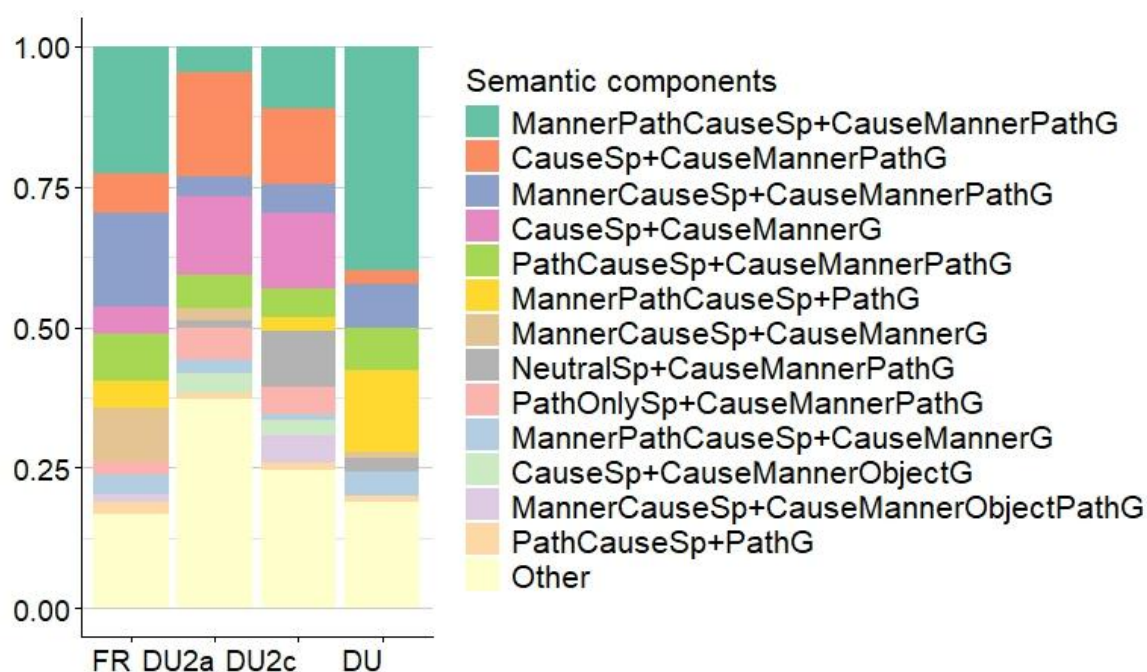


Figure 6.4.13: Distribution of the semantic components in speech and gesture (ICME)

In L1 French, participants encoded manner, path and cause in both speech and gestures in 22.62% while L1 Dutch speakers did so in 40%. In contrast, DU2a learners only encoded these three elements in both speech and gestures in 4.65%, and they did so a bit more often in 2023 (11.11% in DU2c). L1 French participants also tended to encode manner and cause in speech and manner, path and cause in gestures (16.67%) while this was less common in L1 Dutch (7.78%) and L2 Dutch (3.49% in DU2a and 4.94% in DU2c). Learners encoded cause in speech and manner, path and cause in gestures (18.60% in DU2a and 13.58% in DU2c) or cause in speech with a manner-cause gesture (13.95% in DU2a and 13.58% in DU2c).

Figure 6.4.14 illustrates the multimodal constructions that were used to describe intentional caused motion events. It features the categories that occurred at least five times in the dataset (144 out of 340 cases). The other categories are included in “other”.

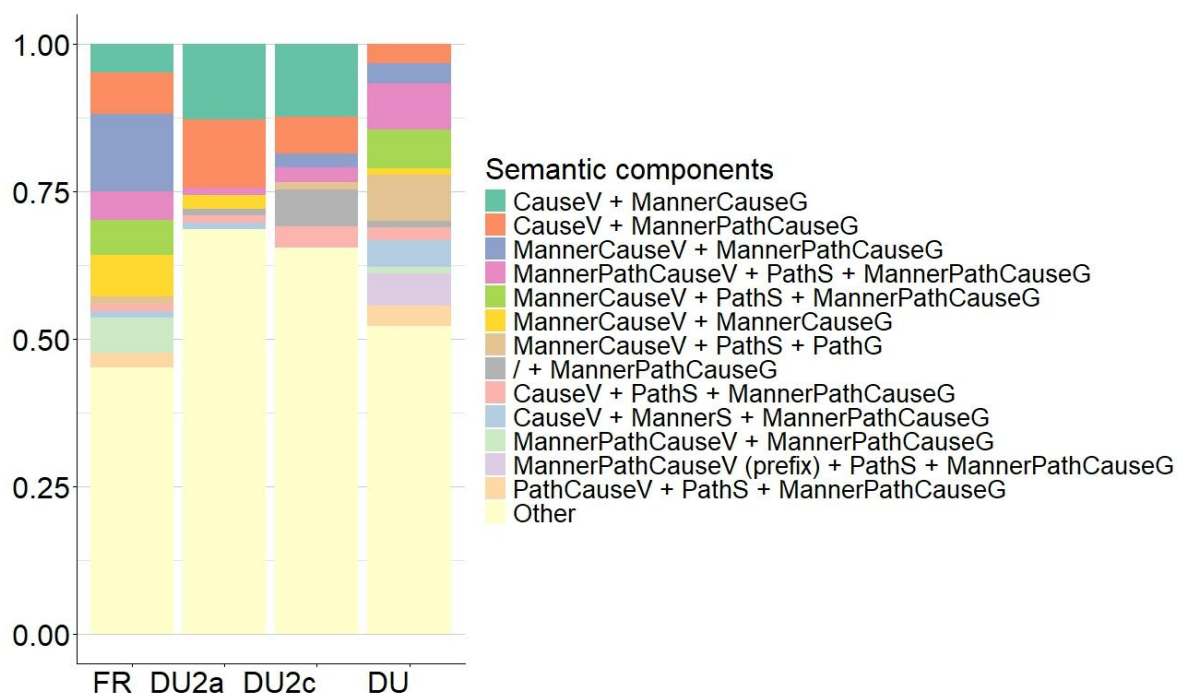


Figure 6.4.14: Distribution of the semantic components in verbs, satellites and gestures across the four groups (ICME)

L1 French speakers tend to combine manner-cause verb with a manner-path-cause gestures (13.10%) whereas L1 Dutch speakers prefer combining a manner-path-cause verb with a path satellite and a manner-path-cause gesture (7.78%) or a manner-cause verb with a path satellite and a manner-path-cause gesture (6.77%). In contrast, L2 learners tend to combine a cause verb with a manner-cause gesture (12.79% in DU2a and 12.35% in DU2c) or a cause verb with a manner-path-cause gesture (11.63% in DU2a and 6.17% in DU2c).

6.4.6. Zoom in on CLIL learners

The semantic components encoded by L2 learners to describe intentional caused motion events are presented in Figure 6.4.15.

Nine learners made as many as or more manner-path-cause gestures in 2023 than in 2021. Eight learners produced as many or more manner-cause gestures in 2023. In addition, CLIL2, CLIL5, CLIL7, CLIL9, CLIL10, and CLIL15 depicted the objects more in 2021 than in 2023 while CLIL1, CLIL6, CLIL12, CLIL13 and CLIL14 did it more than or as many times in 2023.



Figure 6.4.15: CLIL learners' gesture semantics in 2021 and 2023 (ICME)

The speech units with which L2 learners' manner-cause gesture co-occurred are displayed in Figure 6.4.16. L2 learners tend to follow the same pattern and to produce such gestures while they utter the verb. In addition, some learners made such gestures while uttering the object, but they did it either in 2021 (CLIL1, CLIL2, and CLIL6) or in 2023 (CLIL3, CLIL5, CLIL7, CLIL13 and CLIL15).

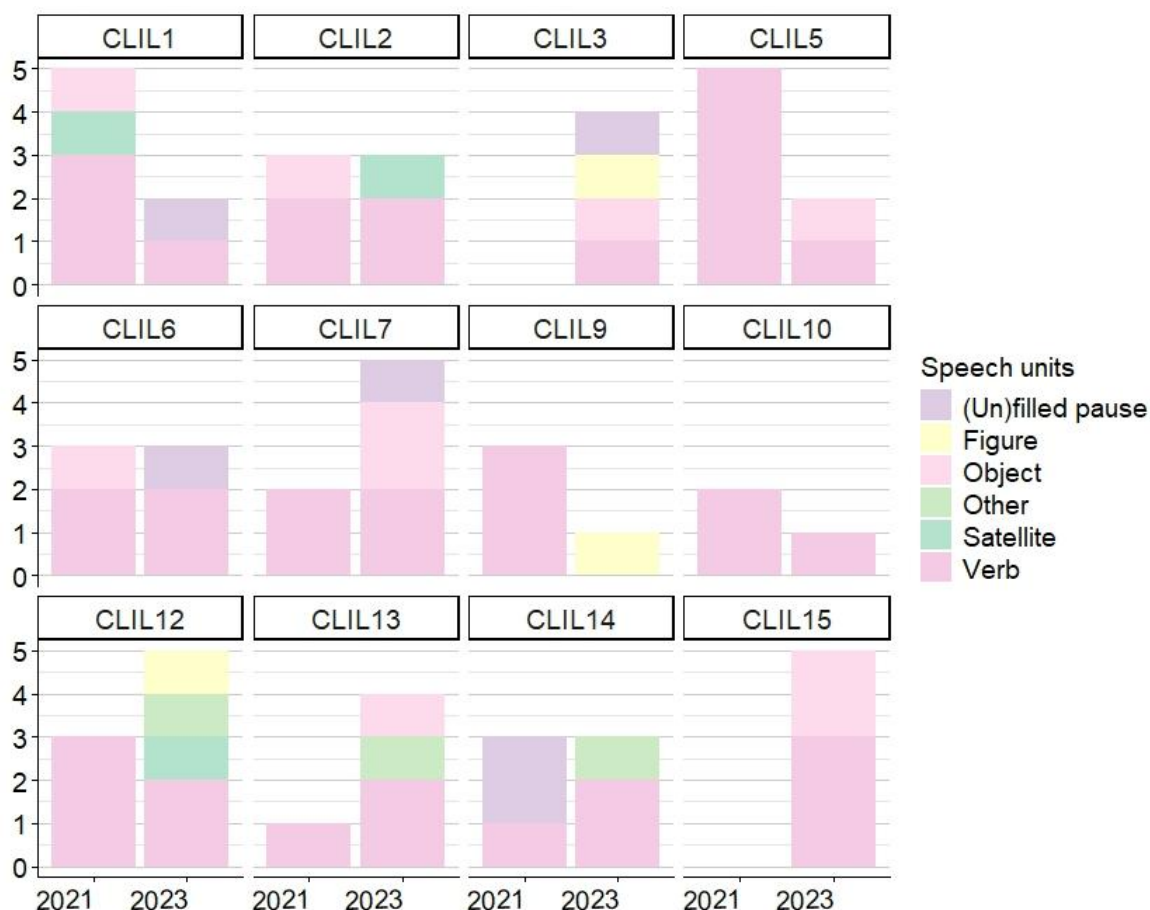


Figure 6.4.16: Synchronization of manner-cause gestures in DU2 in 2021 and 2023
(ICME)

The speech units with which L2 learners' manner-path-cause gesture co-occurred are shown in Figure 6.4.17

L2 learners did not seem to follow the same pattern for manner-path-cause gestures. In fact, there is more variation in the speech units with which such gestures were produced. Only CLIL1 in 2023, CLIL2 in 2021, CLIL5 in 2021, CLIL6 in 2023, CLIL7 in 2023, CLIL12 both in 2021 and 2023 and CLIL13 in 2023 tended to make manner-path-cause gestures while uttering the verb.

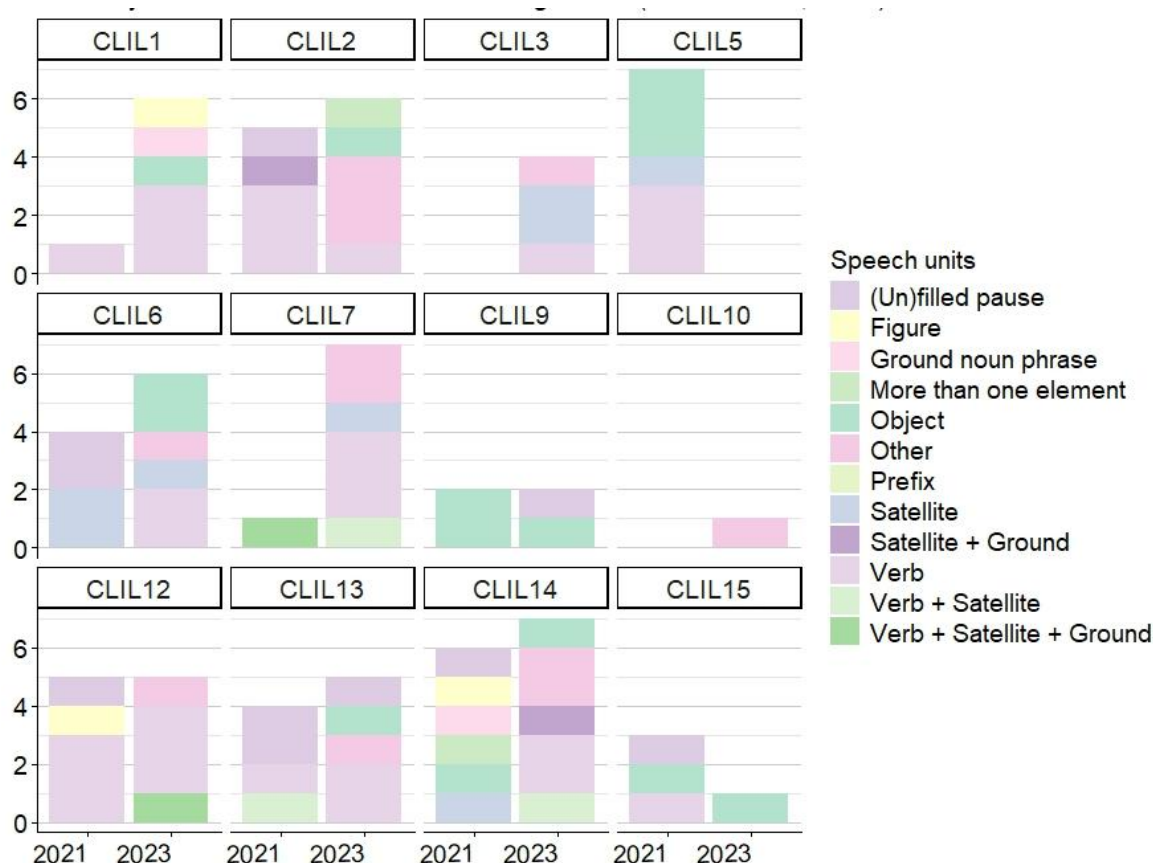


Figure 6.4.17: Synchronization of manner-path-cause gestures in DU2 in 2021 and 2023 (ICME)

6.4.7. Conclusion

This section has delineated the characteristics of the multimodal expression of intentional caused motion events in L1 French, L1 Dutch, and L2 Dutch.

Iconic gestures were used slightly more frequently in L1 than in L2 but this is due to the high numbers of pragmatic gestures in L2 and especially in DU2a. The comparisons between the number of utterances and number of gestures revealed that L1 speakers uttered more descriptions and made fewer gestures than L2 speakers. However, only the difference between L1 French speakers and CLILc learners is significant.

In terms of gesture semantics, L1 speakers encoded manner, path and cause more often in gestures than L2 speakers. The difference between L1 Dutch and L1 French is very small. In contrast, L2 learners tended to make manner-cause gestures and to depict objects, which was less frequent in L1 French and L1 Dutch. Lastly, L1 Dutch speakers also encoded path in gestures to describe intentional caused motion event, which was

less frequent in L1 French and even less frequent in L2 Dutch. If we now observe how gestures are combined, we see that L1 speakers tended to only produce one manner-path-cause gestures while L2 learners preferred using one manner-cause gesture only. In addition, L1 Dutch speakers also produced one path gesture only. Besides these frequent occurrences, there are many different combinations that were observed in the data, which shows how complex communication is.

CLILc participants produced gestures from the character viewpoint the most often, followed by L1 Dutch speakers, CLILa learners and L1 French speakers. These gestures mostly depict manner and cause and manner, path and cause while the gestures made from the observer viewpoint mostly depicted path and objects.

L1 French speakers tended to produce manner-path-cause gestures while uttering the verb. In L1 Dutch, such gestures co-occurred with different speech units, including the verb but the pattern was not as clear as in L1 French. CLILa learners' manner-path-cause gestures tended to co-occur with the verb or with a pause while CLIL3 learners made them while uttering the verb, the object or a pause. In contrast, manner-cause gestures co-occurred more often with the verb in DU2a than in L1 French, DU2c, and L1 Dutch. Lastly, path gestures co-occurred more frequently with the verb in L1 French than in DU2c, L1 Dutch, and DU2a and more often with the satellite in DU2a than in DU2c, L1 Dutch, and in L1 French.

Upon looking at the combinations of semantic components in speech and gestures, it can be seen that L1 speakers (and L1 Dutch speakers more than L1 French speakers) encode the three components in both speech and gestures more frequently than L2 learners who encode cause in speech and manner, path and cause or manner and cause in gestures. In addition, L1 French speakers tend to encode manner and cause in speech and manner, path and cause in gestures while L1 Dutch speakers prefer to encode manner, path and cause in speech and path in gestures. An in-depth analysis of the semantic components encoded in speech units and gestures showed that L2 learners tended to combine a cause verb with a manner-cause gestures or a cause verb with a manner-path-cause gestures (more frequent in DU2c than in DU2a) and that CLILc learners also used manner-path-cause gestures without encoding any of these components in speech. In contrast, L1 French speakers tend to pair a manner-cause verb with a manner-path-cause gesture

while L1 Dutch speakers rather combine a manner-cause verb or a manner-path-cause verb with a path satellite and a manner-path-cause gesture.

Finally, a closer look at CLIL learners showed that nine of them made more manner-path-cause gestures in 2023 than in 2021, which brings them closer to L1 speakers while eight of them made more manner-cause gestures in 2023 than in 2021. In addition, six of them depicted objects more in 2023 than 2021.

6.5. Unintentional caused motion events

This section looks at how unintentional caused motion events are expressed in gestures and then in speech and gestures altogether. Section 6.5.1 analyzes the types of gestures used in the descriptions of self-propelled motion events, Section 6.5.2 delves into the semantic components encoded in gestures, Section 6.5.3 examines gesture viewpoints, Section 6.5.4 explores the synchronization between speech and referential gestures and Section 6.5.5 elaborates on the semantic components encoded in speech and gestures altogether. Finally, Section 6.5.6 zooms in on CLIL learners and Section 6.5.7 provides some concluding remarks.

6.5.1. Gesture types

Figure 6.5.1 illustrates the type of gestures producing during the expression of unintentional caused motion events.

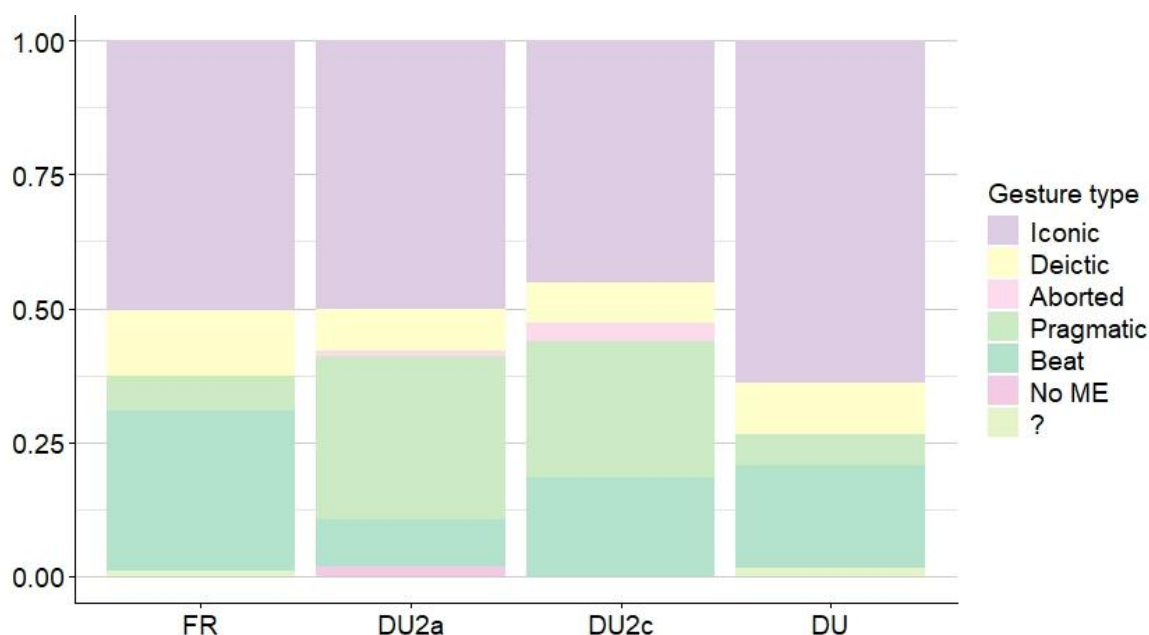


Figure 6.5.1: Gesture types across the four groups (UCME)

Iconic gestures ($n=222$) represent 50.47% of gestures in L1 French ($n=54$), 50% of gestures in DU2a ($n=56$), 45.21% in DU2c ($n=66$) and 63.89% in L1 Dutch ($n=46$). In addition, beats were identified in 29.91% of cases in French in 8.83% in DU2a, 18.49% in DU2c and 19.44% in L1 Dutch. Gestures were deictic in 12.15% of cases in L1 French, 8.04% in DU2a, 7.53% in DU2c and 9.72% in L1 Dutch. Lastly, pragmatic gestures were found in 6.54% of cases in L1 French, 30.36% of cases in DU2a, 25.34% in DU2c and 5.56% in L1 Dutch.

As shown in Figure 6.5.2 and Figure 6.5.3, L1 speakers tend to produce more utterances than L2 speakers and L2 speakers tend to produce more gestures than L1 speakers. L1 French speakers produced a mean of 6.77 utterances ($SD=2.77$, $Mdn=6$, $min=3$ and $max=12$) and a mean of 5.15 gestures ($SD=3.57$, $Mdn=4$, $min=1$ and $max=13$) to describe unintentional caused motion events. L1 Dutch speakers made a mean of 4.75 utterances ($SD=1.6$, $Mdn=5$, $min=2$ and $max=7$) and a mean of 4.42 gestures ($SD=2.91$, $Mdn=4.5$, $min=1$ and $max=9$). In contrast, CLILa participants uttered a mean of 3.82 descriptions ($SD=0.87$, $Mdn=4$, $min=2$ and $max=5$) and made a mean of 5.90 gestures ($SD=4.39$, $Mdn=5$, $min=1$ and $max=14$) and CLILc produced a mean of 4.58 utterances ($SD=1.97$, $Mdn=4$, $min=3$ and $max=9$) and a mean of 6.42 gestures ($SD=3.70$, $Mdn=5.5$, $min=1$ and $max=16$).

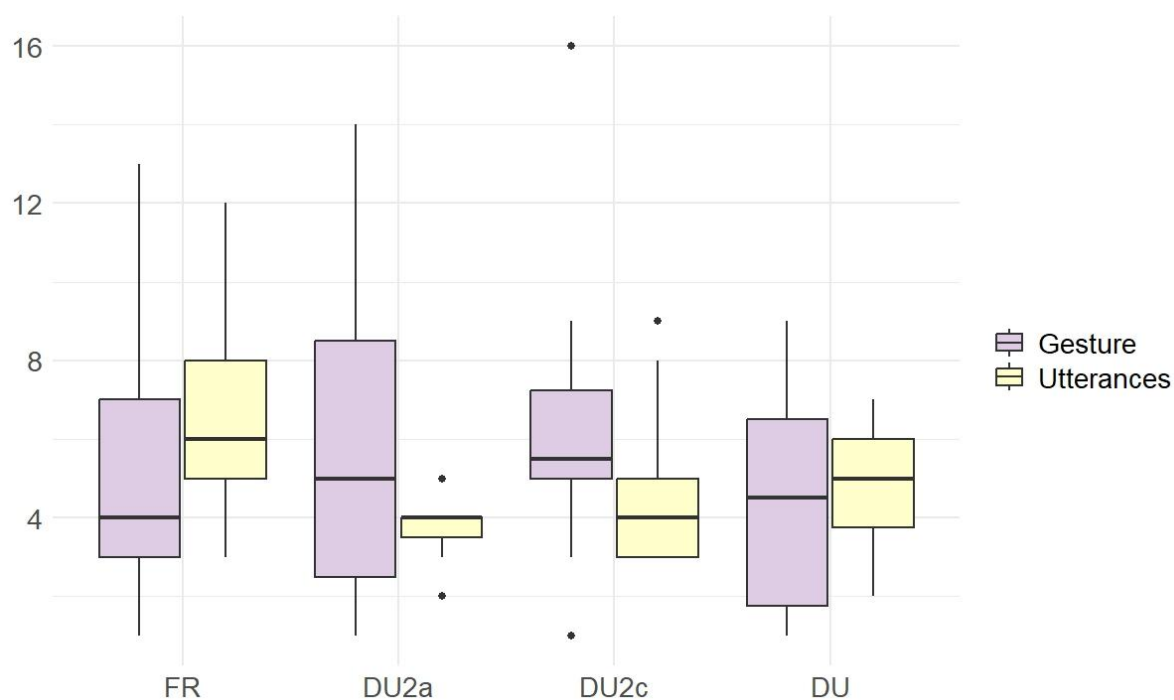


Figure 6.5.2: Distribution of utterances and referential gestures per group (UCME)

In fact, L1 French participants made a mean of 0.80 referential gesture per utterance, L1 Dutch speakers 0.86 whereas L2 Dutch learners produced a mean of 1.47 referential gestures per utterance in 2021 (DU2a) and 1.40 in 2023 (DU2c). A one-way ANOVA was conducted to examine the effect of language on ratio. There was a significant effect of language, $F(3, 44) = 3.91$, $p=0.015$. However, post-hoc Tukey tests did not reveal any significant pairwise differences between the language groups.

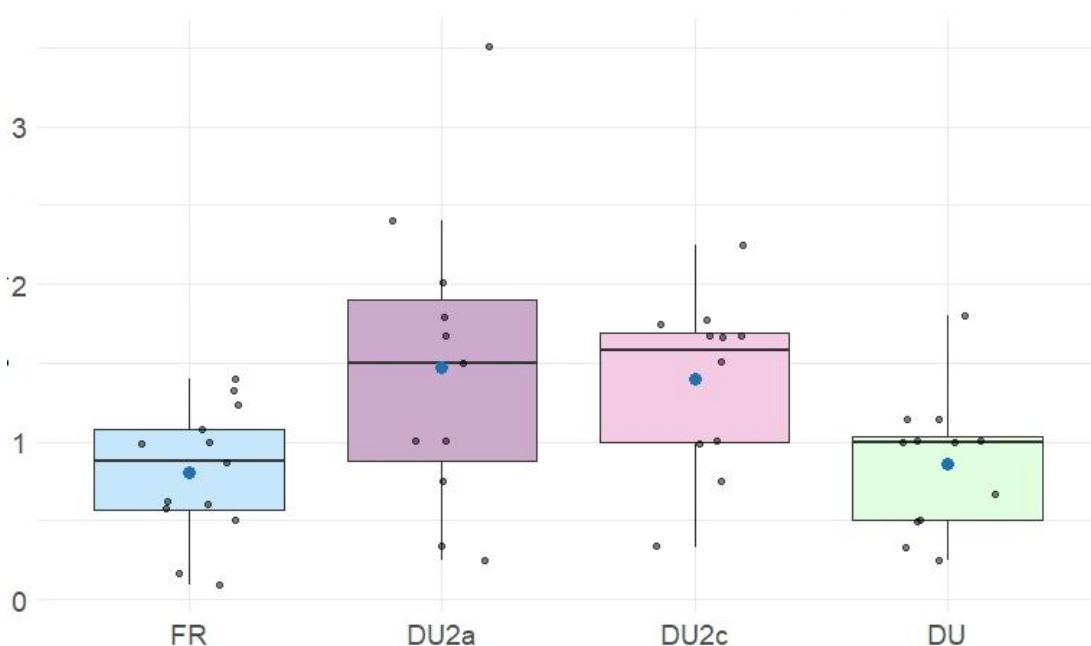


Figure 6.5.3: Number of referential gestures per utterance across the four groups (UCME)

6.5.2. Gesture semantics

In Figure 6.5.4, we can see that when they describe unintentional caused motion events, the participants encoded path in their gestures (59.09% of cases in L1 French, 53.13% in DU2a, 62.67% in DU2c and 60.38% in L1 Dutch).



Figure 6.5.4: Gesture semantics (UCME)

In addition, L1 French speakers encoded both path and ground in gestures in 13.64% of cases, DU2a 7.81%, DU2c 8% and L1 Dutch 7.55%. Figure 6.5.5 illustrates a path-ground gesture: the participant's left hand represents the ground and the right-hand traces Sylvester's path in relation to the ground.



Figure 6.5.5: Path-ground gesture co-occurring with "*puis il glisse jusque dans l'eau*" (FR7, ME110) [then he slides all the way into the water]

CLILa participants located entities in space (14.06%) more often than the other groups (6.06% in L1 French, 1.33% in DU2c and 3.77% in L1 Dutch). They did it less frequently in 2023. Lastly, L1 Dutch speakers also encoded both manner and path in their gestures in 7.55% of cases, DU2c in 5.33%, DU2a in 3.13% and L1 French in 1.52%.

Figure 6.5.7 shows the different gestures that were produced together in one utterance. The most frequent case is one path gesture only (57.14% of cases in L1 French, 50% in L1 Dutch, 40% in DU2c and 33.33% in DU2a) as in Figure 6.5.6 where the participant points toward the abyss to indicate path.



Figure 6.5.6: Path gesture co-occurring with "*en valt de poes door blauwe tralies <> in een afgrond*" (DU1, ME103) [and the cat falls through the blue bars into an abyss]



Figure 6.5.7: Combinations of gestures (UCME)

Learners also produced two path gestures per utterance (13.33% in DU2a and 12% in DU2c). L1 French speakers produced conflated path and ground gestures (10.71%) more often than the other groups (3.33% in DU2a, 6% in DU2c and 6.82% in L1 Dutch).

6.5.3. Viewpoint

Figure 6.5.8 illustrates that 92.42% of the 66 referential gestures in French used to describe unintentional caused motion events are made from the observer viewpoint (cf. Figure 6.5.5). Similarly, 90.63% of the 64 gestures in DU2a, 92% of the 75 gestures in DU2c and 88.68% of the 53 gestures in L1 Dutch are produced from this viewpoint (cf. Figure 6.5.6). This can be accounted for by the fact that few gestures depict manner and most of them depict either path, location or ground.

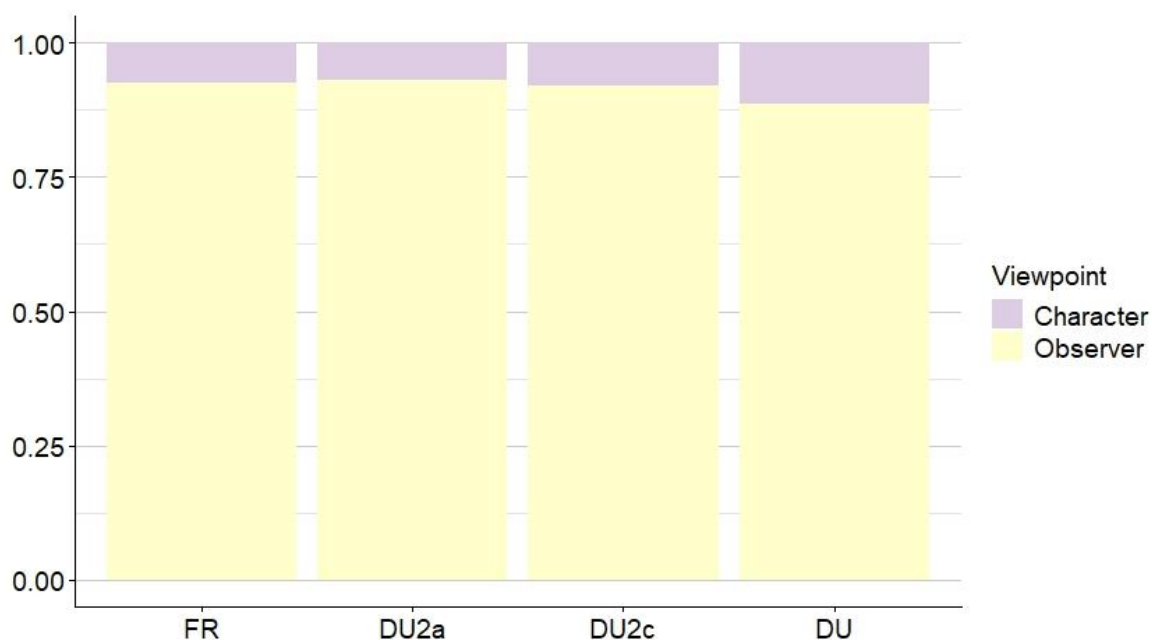


Figure 6.5.8: : Gestural viewpoint across the four groups (UCME)

In fact, Figure 6.5.9 shows that the gestures made from a character viewpoint depict manner, manner and cause or manner path and cause but they are very few as they are only 23-character viewpoint gestures in total. The observer viewpoint gestures are mostly path gestures (63.93% in L1 French, 55.56% in DU2a, 68.12% in DU2c and 68.09% in L1 Dutch).

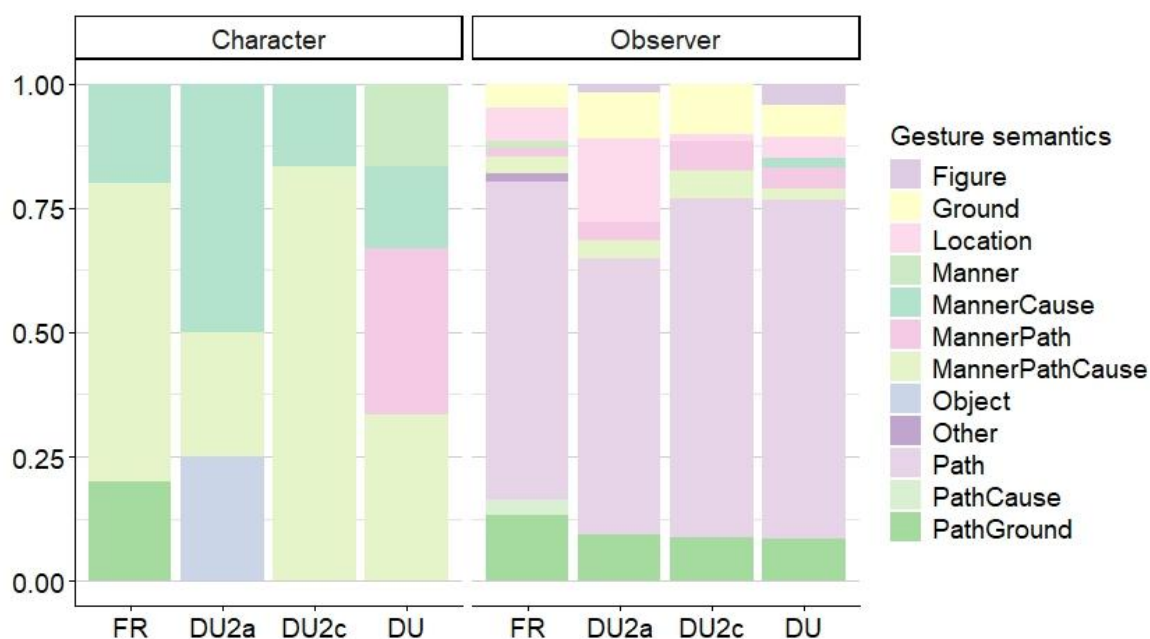


Figure 6.5.9: Gestural viewpoint per semantic component in gestures (UCME)

6.5.4. Synchronization

Figure 6.5.10 presents the distribution of the synchronization of the path gestures used in the descriptions of unintentional motion events.



Figure 6.5.10: Distribution of the synchronization of path gestures (UCME)

Path gestures (n=152) co-occurred with the verb in 53.85% of cases in L1 French (n=21/39) as shown in Figure 6.5.5, 46.88% in L1 Dutch (n=15/32), 26.47% in DU2a

($n=9/34$) and 21.74% in DU2c ($n=10/47$). In addition, they co-occurred with the satellite in 21.74% in DU2c, 15.63% in L1 Dutch, 14.71% in DU2a and 7.69% in L1 French.

6.5.5. Multimodal picture

Figure 6.5.11 illustrates the semantic components present in speech (Sp) and gestures (G). The categories that count at least 2 occurrences in the dataset, which represents 142 out of 180 cases. The categories that occurred only once are to be found in “Other”.

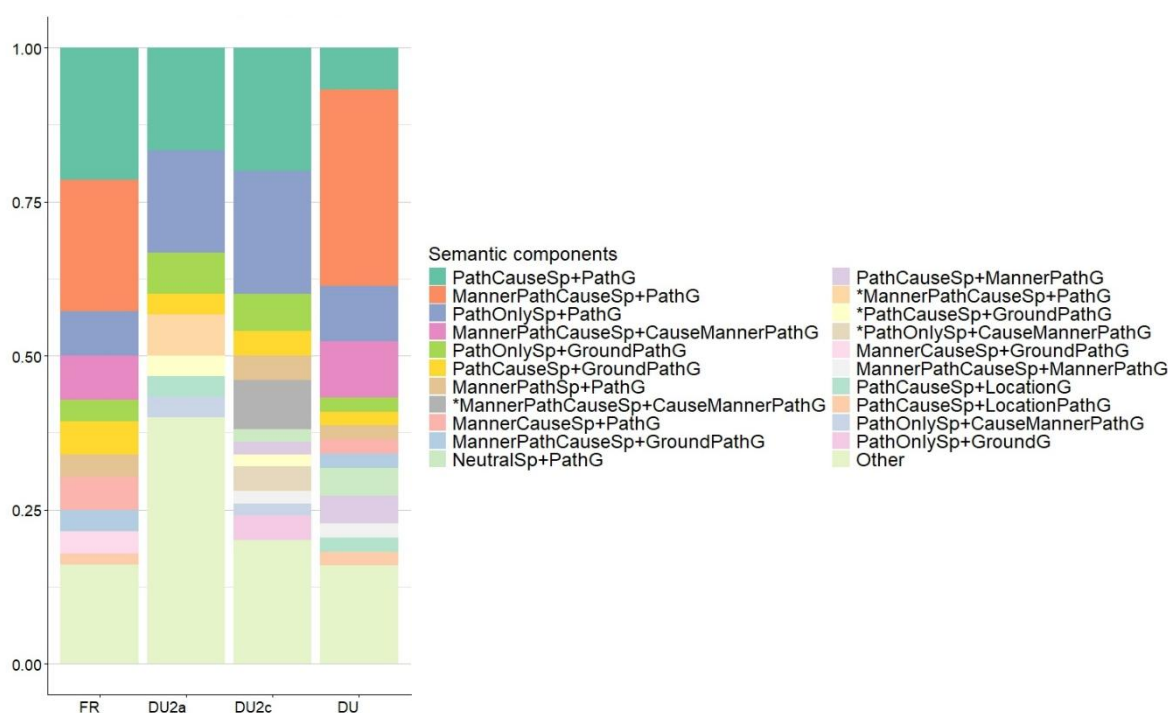


Figure 6.5.11: Distribution of the semantic components in speech and gesture (UCME)

In L1 French, participants combined path and cause in speech with path gestures in 21.43%. CLILa participants did so in 16.67%, CLILc in 20% and L1 Dutch in 6.82% of cases. L1 French speakers also encoded manner, path and cause in speech together with a path gesture in 21.43%, and so did L1 Dutch speakers in 31.82% of cases. In contrast, L2 learners conveyed only path in both speech and gestures in 16.67% in DU2a and 20% in DU2c.

Figure 6.5.12 shows the semantic combinations of verbs (V), satellites (S) and gestures (G). It features the categories that count at least two occurrences (92 out of 180 cases). The ones that only occurred once appear under “Other”.

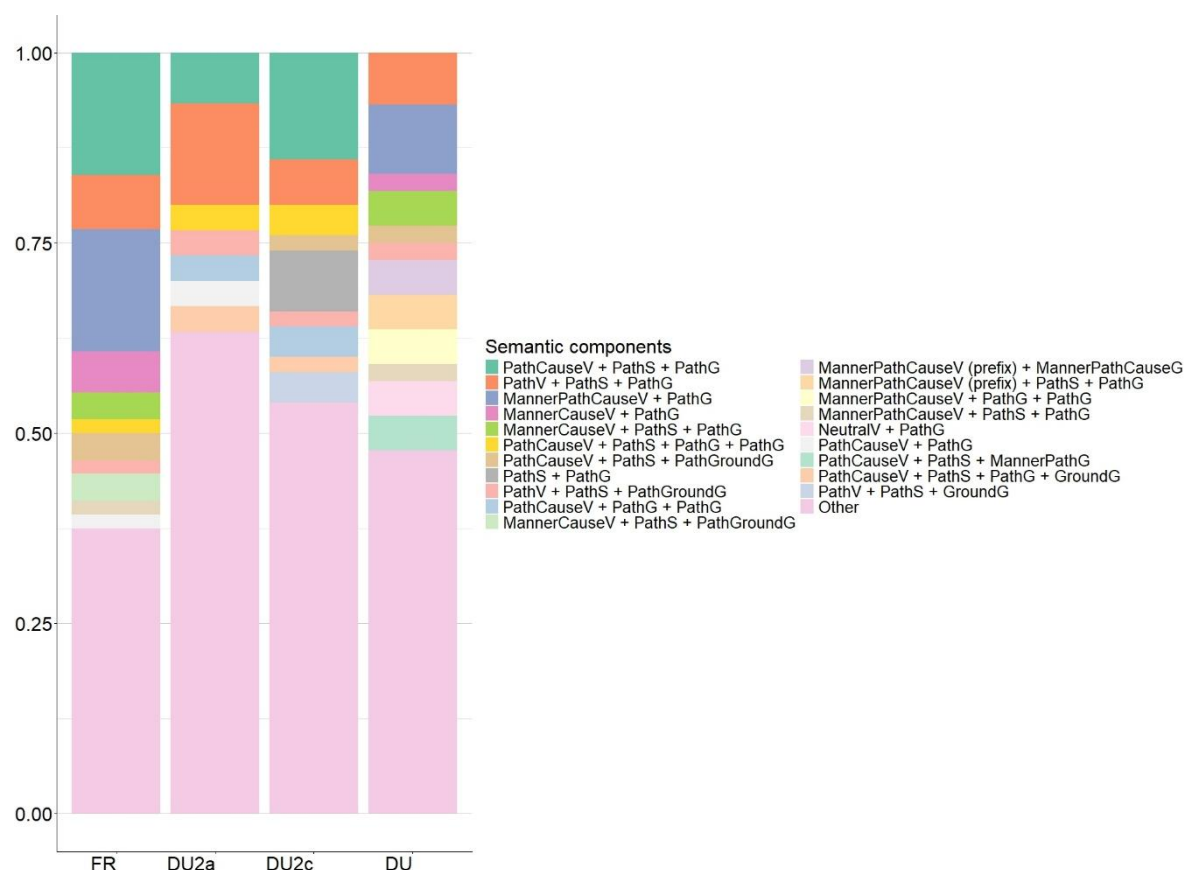


Figure 6.5.12: Distribution of the semantic components in verbs, satellites and gestures across the four groups (UCME)

As can be seen, the category “other” represents 37.50% of the data in French, 63.33% in DU2a, 54% in DU2c and 47.73% in L1 Dutch, which shows again that there is a lot of variation. The most prominent multimodal constructions are: a path-cause verb with a path satellite and a path gesture in L1 French (16.07%) and DU2c (14%), path verb with a path satellite and a path gesture (13.33% in DU2a, 7.14% in L1 French, 6.82% in L1 Dutch and 6% in DU2c) and a manner-path-cause verb with a path gesture (16.07% in L1 French and 9.09% in L1 Dutch).

6.5.6. Zoom in on CLIL learners

Figure 6.5.13 presents the semantic components CLIL learners encoded in gestures in 2021 and 2023 to describe unintentional caused motion events.



Figure 6.5.13: CLIL learners' gesture semantics in 2021 and 2023 (UCME)

Path is the semantic component that was encoded the most often by all learners except for CLIL1 in 2023, CLIL14 in 2021 and CLIL15 in 2021 (who did not make any gestures). They all made as many as or more path gestures in 2023 than in 2021 except for CLIL1, CLIL5, and CLIL6.

CLIL5 and CLIL7 also tended to locate entities in 2021 and CLIL10 CLIL14 did so to a lesser degree respectively in 2023 and 2021.

Some participants also made ground gestures; CLIL1, CLIL2, CLIL3, CLIL14 and CLIL15 made as many as or more ground gestures in 2023 than in 2021 and CLIL12 produced them more in 2021.

Figure 6.5.14 displays the speech units with which path gestures co-occurred in L2 Dutch.



Figure 6.5.14: Synchronization of path gestures in DU2 in 2021 and 2023 (UCME)

Once again, there is a lot of individual variation even within learners. Only CLIL6, CLIL7 and CLIL10 showed consistent behaviors in 2023 but their gestures co-occurred with the different speech units, namely the verb, satellite and ground, the verb and the satellite. Nevertheless, the amount of data is limited here and should therefore be interpreted carefully.

6.5.7. Conclusion

This section has outlined the characteristics of the multimodal expression of unintentional caused motion events in L1 French, L1 Dutch, and L2 Dutch.

In line with the findings on self-propelled and intentional caused motion events, it was found that L2 learners and especially CLILa learners made pragmatic gestures more frequently than L1 speakers. Iconic gestures were used more frequently in L1 Dutch than in L1 French than in DU2a and than in DU2c and deictic gestures were used more often

in L1 French than L1 Dutch, and L2 Dutch. Still, L2 learners produced more referential gestures per utterance than L1 speakers.

Regarding gesture semantics, path is the component that was encoded the most frequently by all groups, and CLILc learners did so more often than L1 Dutch speakers who did it slightly more often than L1 French speakers who did it more frequently than CLILa learners. In addition, L1 French speakers encoded path and ground in gestures more often than L1 Dutch speakers, CLILc learners and CLILa learners. L1 speakers tended to use one path gesture only to describe unintentional caused motion events. L2 learners did so too but to a lesser degree. They sometimes accumulated two path gestures in one utterance. In addition, the production of one path-ground gesture was more frequent in L1 French than L1 Dutch than DU2c and than DU2a. Lastly, different combinations of gestures were found in the dataset.

Most gestures were made from the observer viewpoint by the four groups.

Concerning synchronization, path gestures occurred more often with the verb in L1 French than in L1 Dutch, DU2a, and DU2c. On the other hand, they were produced at the same time as the satellite more frequently in DU2c than in L1 Dutch, DU2a, and L1 French. Lastly, L2 learners also tended to make path gestures during pauses, especially CLILa learners.

L1 French speakers showed a preference for the encoding of path and cause in speech and path in gestures and for encoding manner, path and cause in speech together with a path gesture. The latter is the combination that was found the most often in L1 Dutch data. In contrast, learners tended to encode only path in both speech and gesture or path and cause in speech together with a path gesture as in L1 French. A zoom in on the distribution of semantic components across speech units and gestures revealed that CLILc learners combined path-cause verbs with path satellites and path gestures as L1 French speakers and CLILa did so too but to a lesser degree. In fact, CLILa learners encoded only path in both speech and gesture more often than CLILc and L1 speakers, but L1 Dutch speakers surprisingly also tended to do so. Lastly, L1 speakers tended to encode manner, path and cause in the verb and accompany it with a path gesture and this combination was more frequent in L1 French than in L1 Dutch.

6.6. Caused location events

This section examines how caused location events are expressed in gestures and then in speech and gestures altogether. Section 6.6.1 looks at the types of gestures used in the descriptions of caused location events, Section 6.6.2 analyzes the semantic components encoded in gestures, Section 6.6.3 elaborates on gesture viewpoints, Section 6.6.4 explores the semantic components encoded in speech and gestures altogether. Finally, Section 6.6.5 zooms in on CLIL learners and Section 6.6.6 provides some concluding remarks.

6.6.1. Gesture types

Figure 6.6.1 displays the types of gestures that were produced during the descriptions of caused location events.

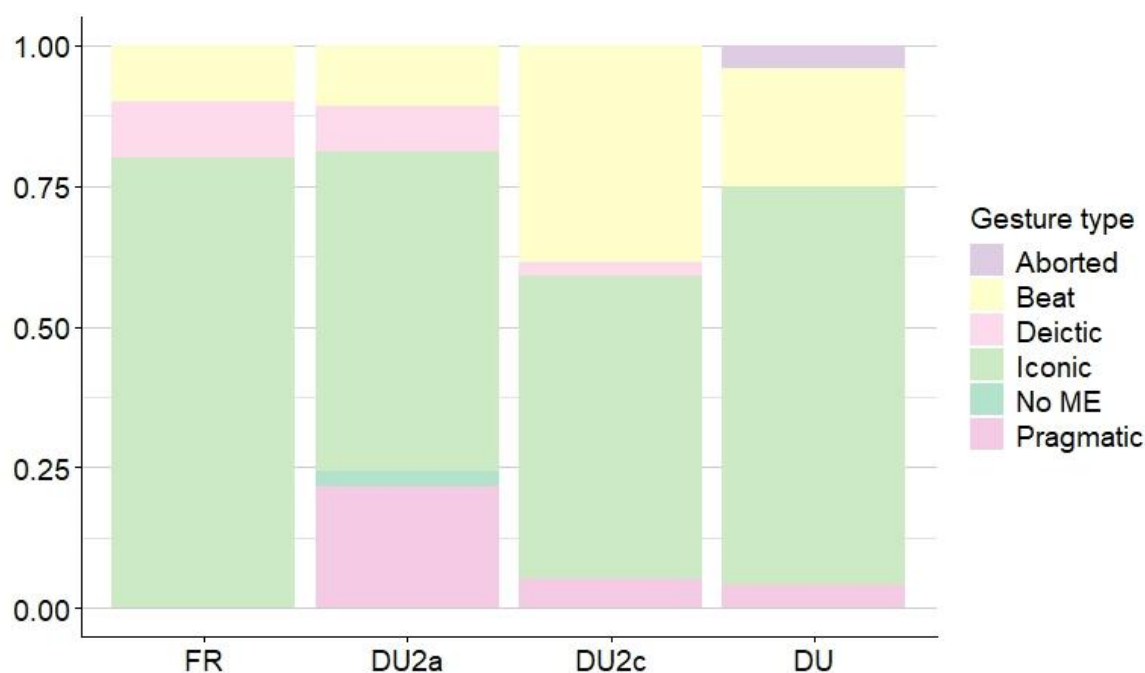


Figure 6.6.1: Gesture types across the four groups (CLE)

In L1 French, iconic gestures represent 80% of cases ($n=16/20$). In L1 Dutch, 70.83% of gestures are iconic ($n=17/24$) whereas only 56.76% ($n=21/37$) in DU2a and 53.85% ($n=21/39$) in DU2c are iconic. In addition, CLILa participants made pragmatic gestures in 21.62% and CLILc participants produced beats in 38.46% of cases.

6.6.2. Gesture semantics

Figure 6.6.2 presents the semantic components encoded in gestures to express caused location events.

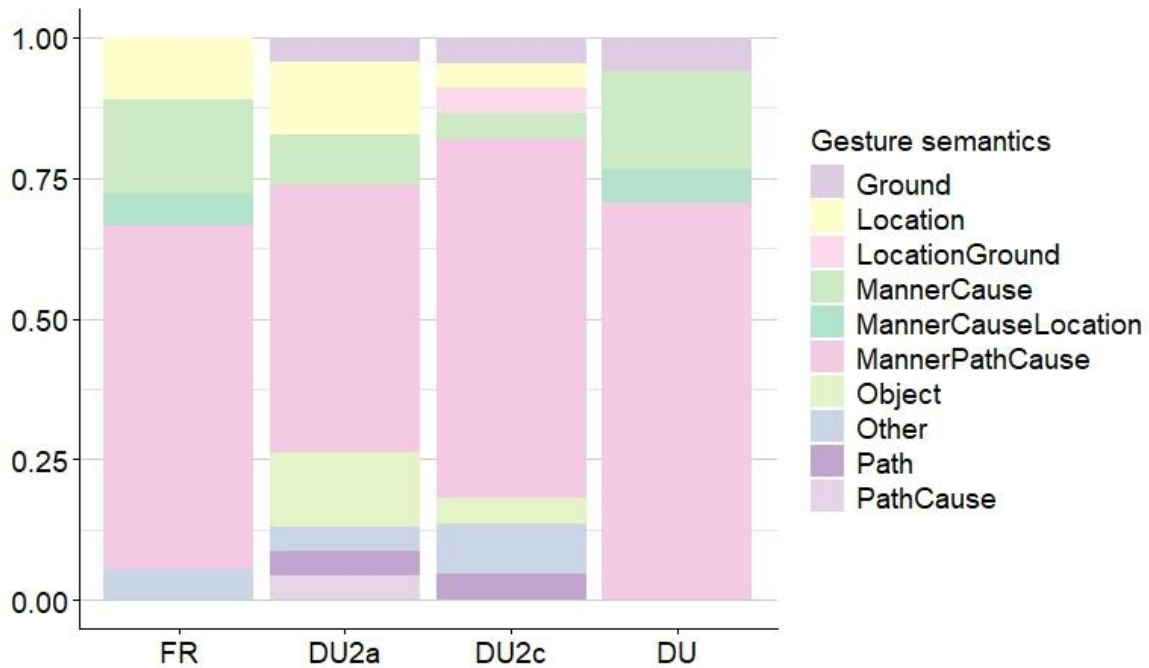


Figure 6.6.2: Gesture semantics (CLE)

The participants encoded manner, path and cause in gestures (70.59% in L1 Dutch, 61.11% in L1 French, 63.64% in DU2c and 47.83% in DU2a). Figure 6.6.3 illustrates a manner-path-cause gesture as the participant shows how the lion was holding Sylvester and put him into the water. In addition, they also conveyed manner and cause through gestures (17.65% in L1 Dutch, 16.67% in L1 French, 8.70% in DU2a and 4.55% in DU2c).



Figure 6.6.3: Manner-path-cause gesture co-occurring with "en dan steekt die dus die **kat ondersteboven** in het water" (DU2, ME97) [and then he puts that cat upside down in the water]

Figure 6.6.4 shows how gestures are combined in one utterance. In L1 French, participants made one gesture only most of the time (either manner-path-cause (53.33%) or manner-cause (20%)). We observe a similar situation in L1 Dutch with manner-path-cause gestures in 64.29% of cases and manner-cause gestures in 14.29%. In DU2c, participants also tended to make manner-path-cause gestures (35.71%) next to different combinations occurring only once such as two manner-path-cause and one location gestures. Lastly, DU2a participants made two manner-path-cause gestures in 27.27% and also combined various gestures once.

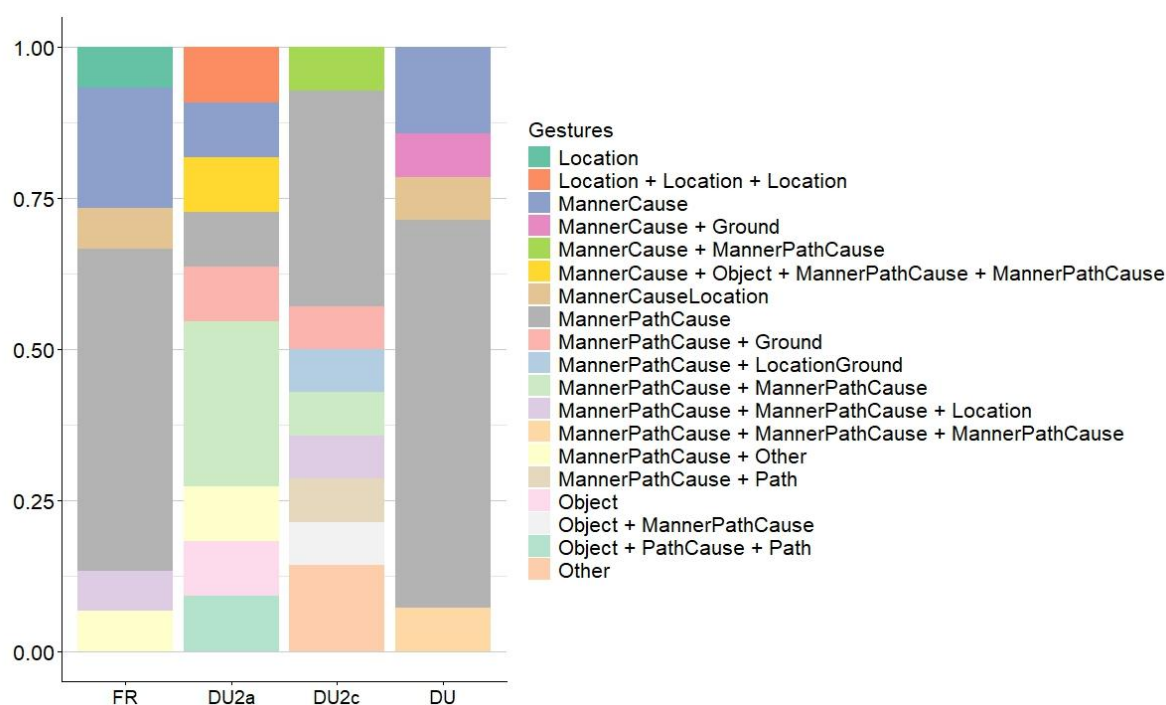


Figure 6.6.4: Combinations of gestures (CLE)

6.6.3. Viewpoint

In Figure 6.6.5, we can see that the gestures describing caused location events are made from a character viewpoint in 88.89% of cases in L1 French, 73.91% in DU2a, 68.18% in DU2c and 94.12% in L1 Dutch (cf. Figure 6.6.3).

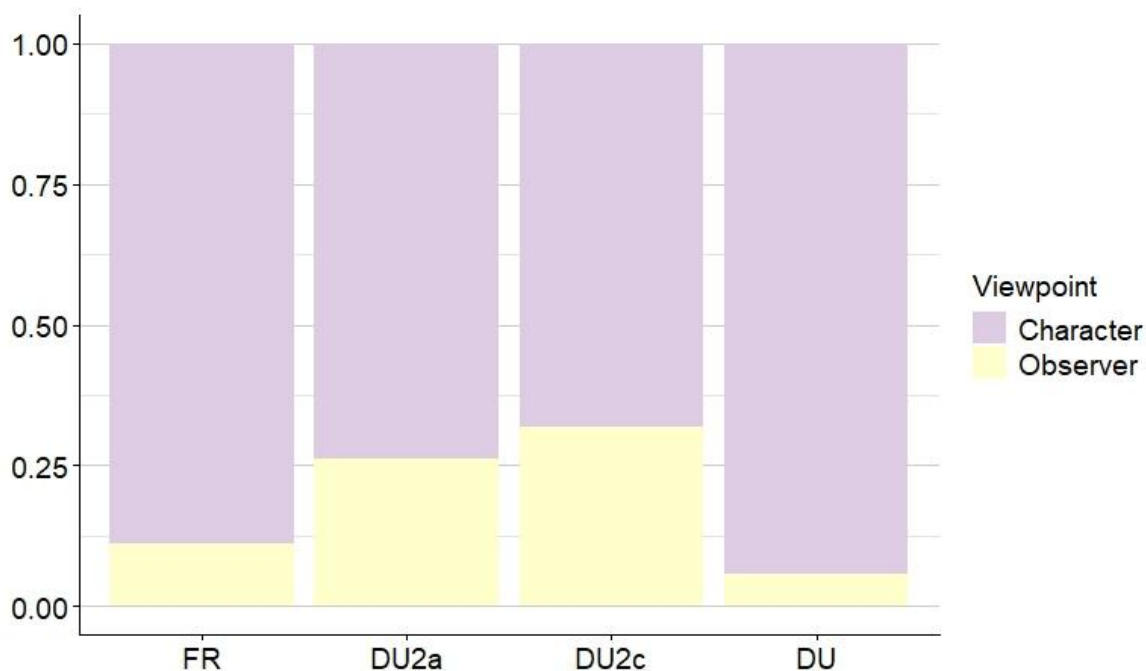


Figure 6.6.5: Gestural viewpoint across the four groups (CLE)

The character viewpoint gestures depict manner, path and cause in 68.75% of cases in L1 French, 64.81% in DU2a, 93.33% in DU2c and 75% in L1 Dutch (cf. Figure 6.6.3) and manner and cause in 18.75% of cases in L1 French, 11.76% in DU2a, 6.67% in DU2c and 18.75% in L1 Dutch. As there are only 16 gestures produced from the observer viewpoint (2 in L1 French, 6 in DU2a, 7 in DU2c and 1 in L1 Dutch), no conclusions can be drawn from Figure 6.6.6.

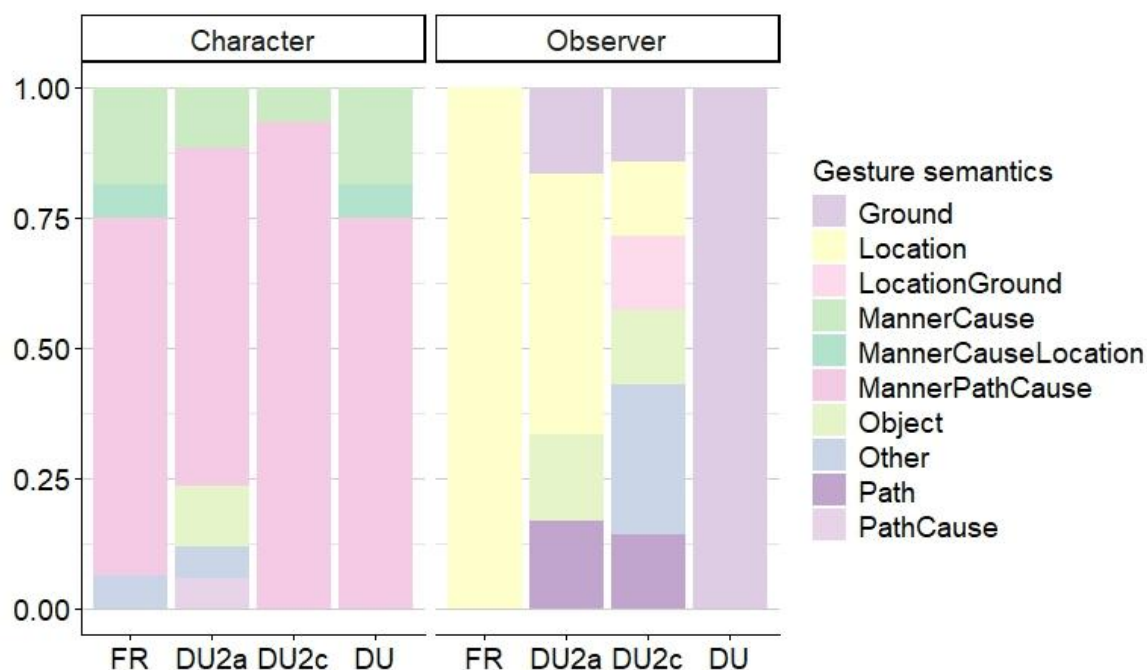


Figure 6.6.6: Gestural viewpoint per semantic component in gestures (CLE)

6.6.4. Multimodal picture

Figure 6.6.7 presents the combination of semantic components in speech and gestures that occurred at least twice in the dataset (32 out of 54 cases). The rest is represented by “Other”.

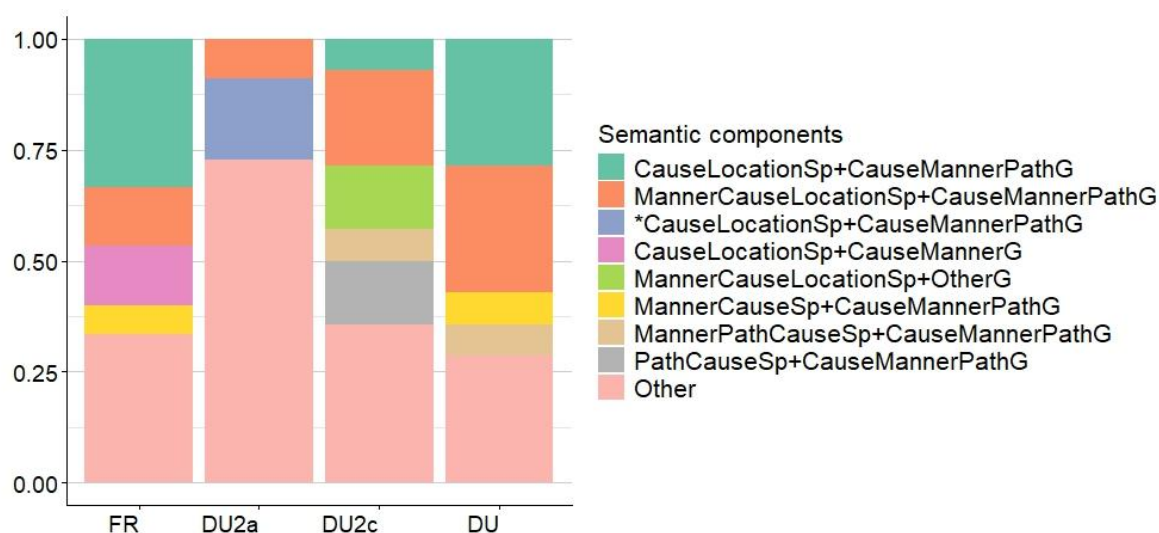


Figure 6.6.7: Distribution of the semantic components in speech and gesture (CLE)

L1 French participants and L1 Dutch participants tended to encode cause and location in speech and manner, path and location in gestures (respectively in 33.33% and

28.57%). In addition, L1 Dutch speakers encoded manner, cause and location in speech and manner, path and cause in gestures in 28.57%. DU2c learners did so in 21.43% while CLILa learners only did it in 9.09%. In fact, CLILa participants aimed at expressing cause and location in speech together with a manner, path, cause gesture in 18.18% while CLILc learner encoded path and cause in speech and manner, path and cause in gesture in 14.29%.

Figure 6.6.8 displays the multimodal constructions that occurred at least twice in the dataset (25 cases out of 54). The rest is included in “Other”.

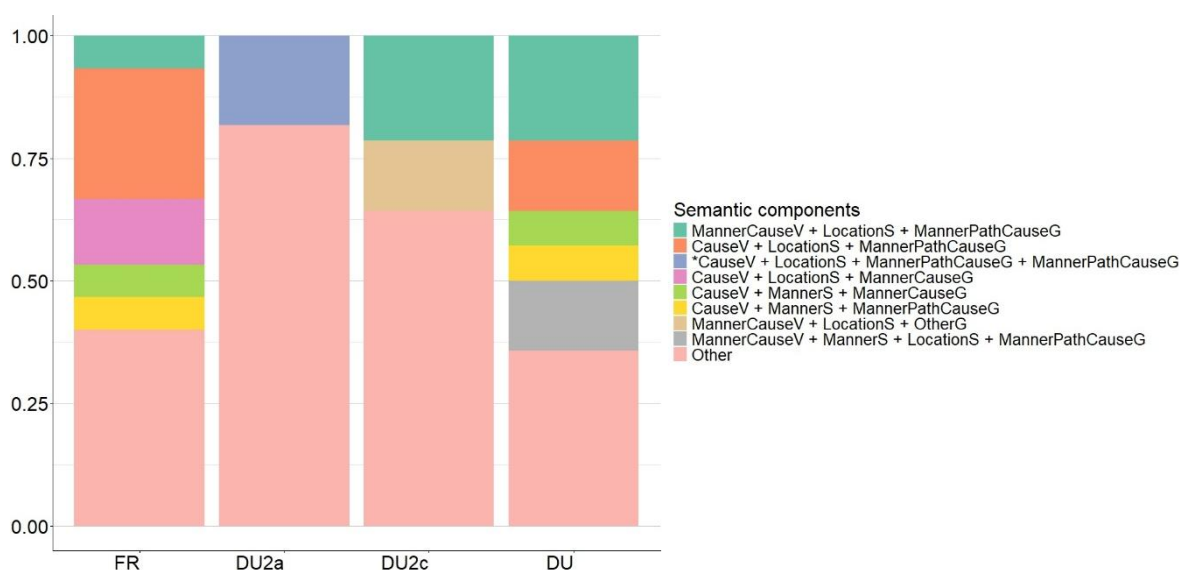


Figure 6.6.8: Distribution of the semantic components in verbs, satellites and gestures across the four groups (CLE)

L1 French speakers used a cause verb with a location satellite and a manner-path-cause gesture in 26.67% of cases and a cause verb with a location satellite and a manner-cause gesture in 13.33%. In contrast, L1 Dutch speakers used a manner-cause verb with a location satellite and a manner-path-cause gesture in 21.43%, a cause verb with a location satellite and a manner-path-cause gesture in 14.29% and a manner-cause verb with a manner satellite, a location satellite and a manner-path-cause gesture in 14.29%. CLILa participants used the wrong form of a cause verb (or the verb in another language) together with a location satellite and two manner-path-cause gestures in 18.18%. Lastly, CLILc used a manner-cause verb with a location satellite and a manner-path-cause gesture in 21.43% of cases.

6.6.5. Zoom in on CLIL learners

Figure 6.6.9 presents the semantic component encoded in CLIL learners' gestures to describe caused location events. The number of gestures per learner is very limited, which is related to the low numbers of descriptions.



Figure 6.6.9: CLIL learners' gesture semantics in 2021 and 2023 (CLE)

Overall, learners encoded manner, path and cause in their gestures but some of them also encoded other components such as location, ground or even the object.

6.6.6. Conclusion

This section was included for the sake of exhaustivity, but the results should be taken with a pinch of salt as the amount of data is very limited.

Only CLILa learners made pragmatic more often than L1 speakers but CLILc learners produced beats more often. Again, iconic gestures were more frequent in L1 than in L2 due to the high numbers of non-referential gestures in L2.

The four groups tended to make manner-path-cause gestures to describe caused location events and contrary to the results on unintentional caused motion events, L1 speakers produced manner-cause gestures more often than L2 speakers. Lastly, L2 learners and especially CLILa, combined gestures more often than L1 speakers.

Most gestures were made from the character viewpoint.

L1 Dutch speakers encoded manner, cause and location in speech and manner, path and cause in gesture or cause and location in speech and manner, path and cause in gestures. The latter was also frequent in L1 French. CLILa learners attempted to encode cause and location in speech and encoded manner, path and cause in gestures while CLILc encoded manner, cause and location in speech and manner, path and cause in gesture, as Dutch L1 speakers. Still, it should be noted that there was a lot of variation and that most categories did not occur more than once or twice.

6.7. Location events

This section looks at how self-propelled events are expressed in gestures and then in speech and gestures altogether. Section 6.7.1 examines the types of gestures used in the descriptions of self-propelled motion events, Section 6.7.2 analyzes the semantic components encoded in gestures, Section 6.7.3 elaborates on gesture viewpoints, Section 6.7.4 delves into the synchronization between speech and referential gestures and Section 6.7.5 explores the semantic components encoded in speech and gestures altogether. Finally, Section 6.7.6 zooms in on CLIL learners and Section 6.7.7 provides some concluding remarks.

6.7.1. Gesture types

Figure 6.7.1 illustrates the distribution of gesture types across the four groups.

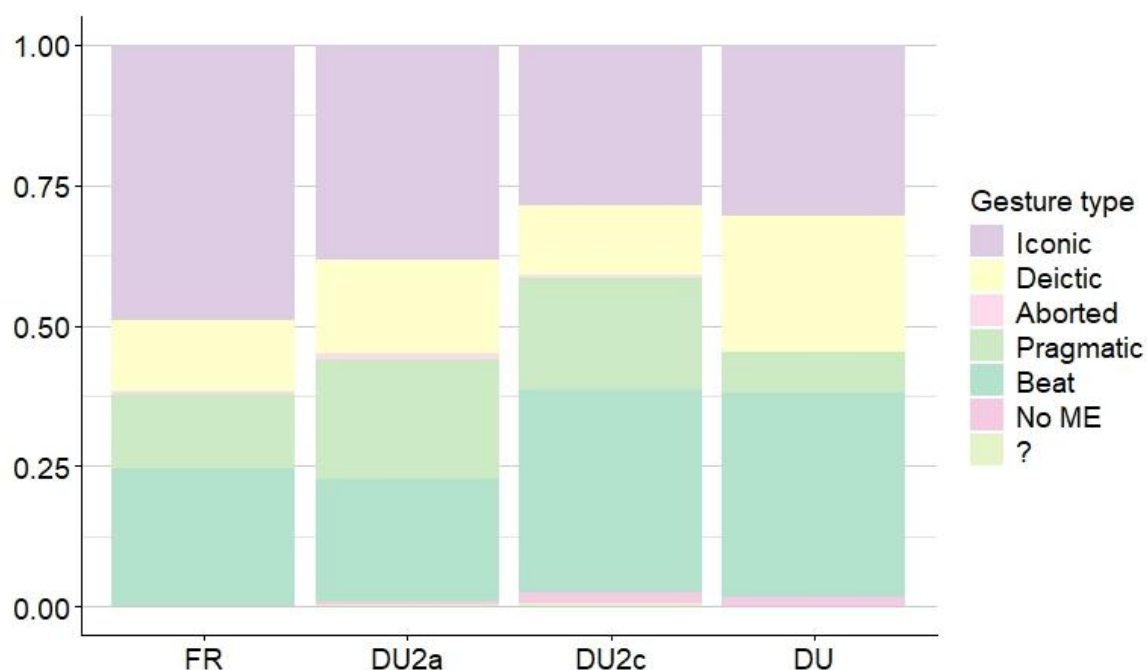


Figure 6.7.1: Gesture types across the four groups (LE)

In L1 French (n=175), participants used iconic gestures in 49.14% of cases (n=86), beats in 24.57%, pragmatic gestures in 13.14% and deictic gestures in 12.57% (n=22). In DU2a (n=211), participants produced iconic gestures in 38.39% (n=81), beats in 21.80%, pragmatic gestures in 21.33% and deictic gestures in 16.59% (n=35). In DU2c (n=373), participants made iconic gestures in 28.69% (n=107), beats in 36.89%, pragmatic gestures in 19.84% and deictic gestures in 12.33% (n=46). Lastly, L1 Dutch speakers (n=168) used beats in 36.31%, iconic gestures in 30.36% (n=61), deictic gestures in 24.40% (n=41) and pragmatic gestures in 7.14%.

Figure 6.7.2 and Figure 6.7.3 show that L2 learners made more gestures than L1 learners if we compare the median of gestures with the median of utterances and the ratio of gestures per utterance.

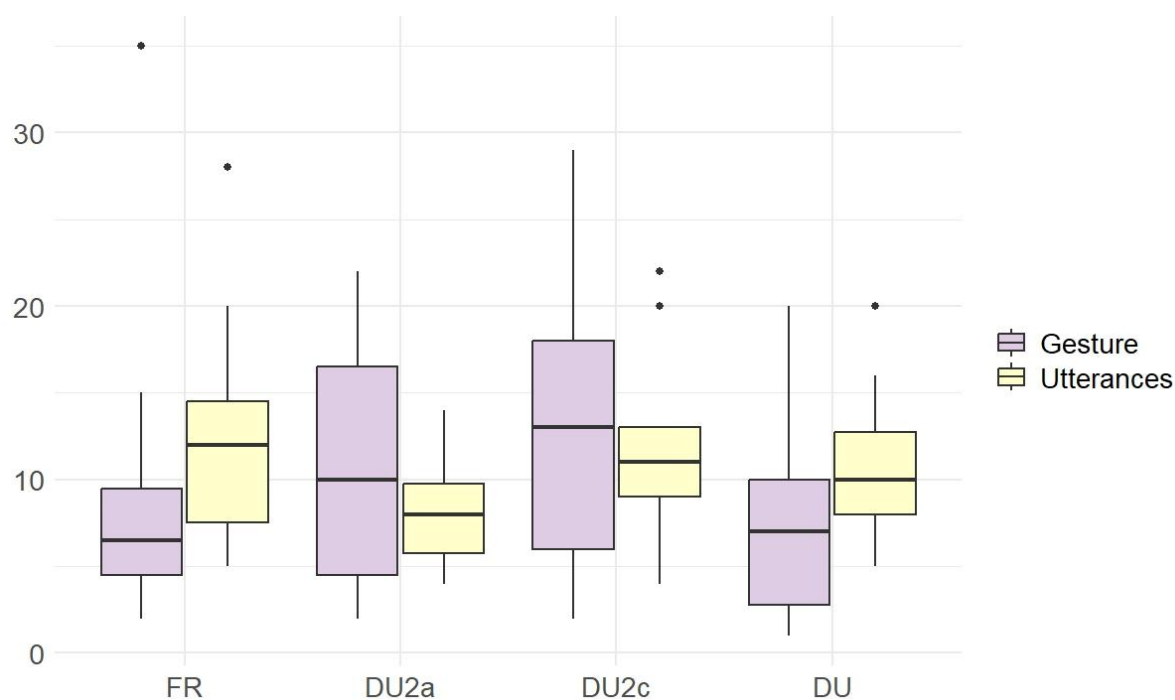


Figure 6.7.2: Distribution of utterances and referential gestures per group (LE)

L1 French participants made a mean of 11.9 utterances (SD=6.20, Mdn=12, min=5 and max=8) and a mean of nine gestures (SD=9.04, Md= 6.5, min=2 and max=35). L1 Dutch speakers produced a mean of 10.43 utterances (SD=4.36, Mdn=10, min= 4 and max=20) and a mean of 7.67 gestures (SD= 5.88, Mdn=7, min=1, max=20).

CLILa participants uttered a mean of 8.25 descriptions (SD=3.31, Mdn=8, min= 4 and max=14) and made a mean of 10.54 gestures (SD=7.08, Mdn=10, min= 2 and max=22). CLILc participants produced a mean of 11.67 descriptions (SD=5.08, Mdn=11, min=4 and max=22) and a mean of 12.75 gestures (SD=8.10, Mdn=13, min=2 and max=29). CLILc participants' mean of utterances is thus closer to that of L1 speakers than CLILa participants' and CLILc participants' mean gesture rate is lower than CLILa participants' but still higher than that of L1 speakers.

It can be seen that L1 French speakers made a mean of 0.66 gesture per utterance and L1 Dutch speakers 0.70 whereas CLILa learners produced a mean 1.22 gestures per utterance and CLILc learners 1.03. A one-way ANOVA was performed to examine the effect of language on ratio. There was a significant effect of language, $F(3, 43) = 2.88$, $p=0.047$ but post-hoc Turkey test found no significant differences between the groups.

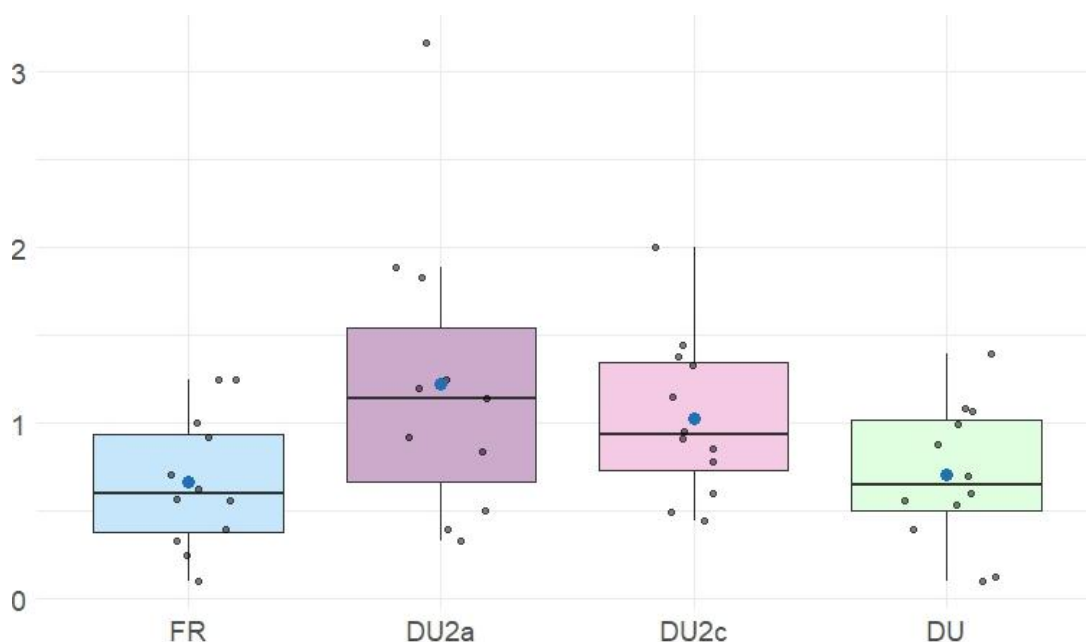


Figure 6.7.3: Number of referential gestures per utterance across the four groups (LE)

6.7.2. Gesture semantics

Figure 6.7.4 show the different semantic components that were encoded in the gestures used in location events.



Figure 6.7.4: Gesture semantics (LE)

In L1 French, 48.15% of gestures depicted location and 39.81% ground. In DU2a, 46.60% of gestures served to locate entities in space as in Figure 6.7.5 and 35.92% depicted the

ground. In DU2c, 55.63% of gestures encoded location and 27.15% ground. Lastly, 70.65% of gestures conveyed location and 16.30% ground.



Figure 6.7.5: Location gesture co-occurring with "en <> Grosminet *is* in dat" (CLIL12a, ME29) [and <> Sylvester is in that]

Figure 6.7.6 shows once more how complex reality is. What we can retain from this graph is that one location gesture only the most frequent is (60.53% in L1 Dutch, 37.50% in DU2a, 36.59% in L1 French and 20.37% in DU2a). In addition, L1 French speakers also made ground gestures in 29.27% of cases and one location gesture together with one ground gesture in 9.76%. L1 Dutch participants do so respectively in 9.21% and 5.26% of cases. CLILa participants made one ground gesture in 12.96% and two location gestures in 7.41% and CLILc participants produced a ground gesture in 13.54% and two location gestures in 10.42%. Lastly, learners are the ones who show the most variation.

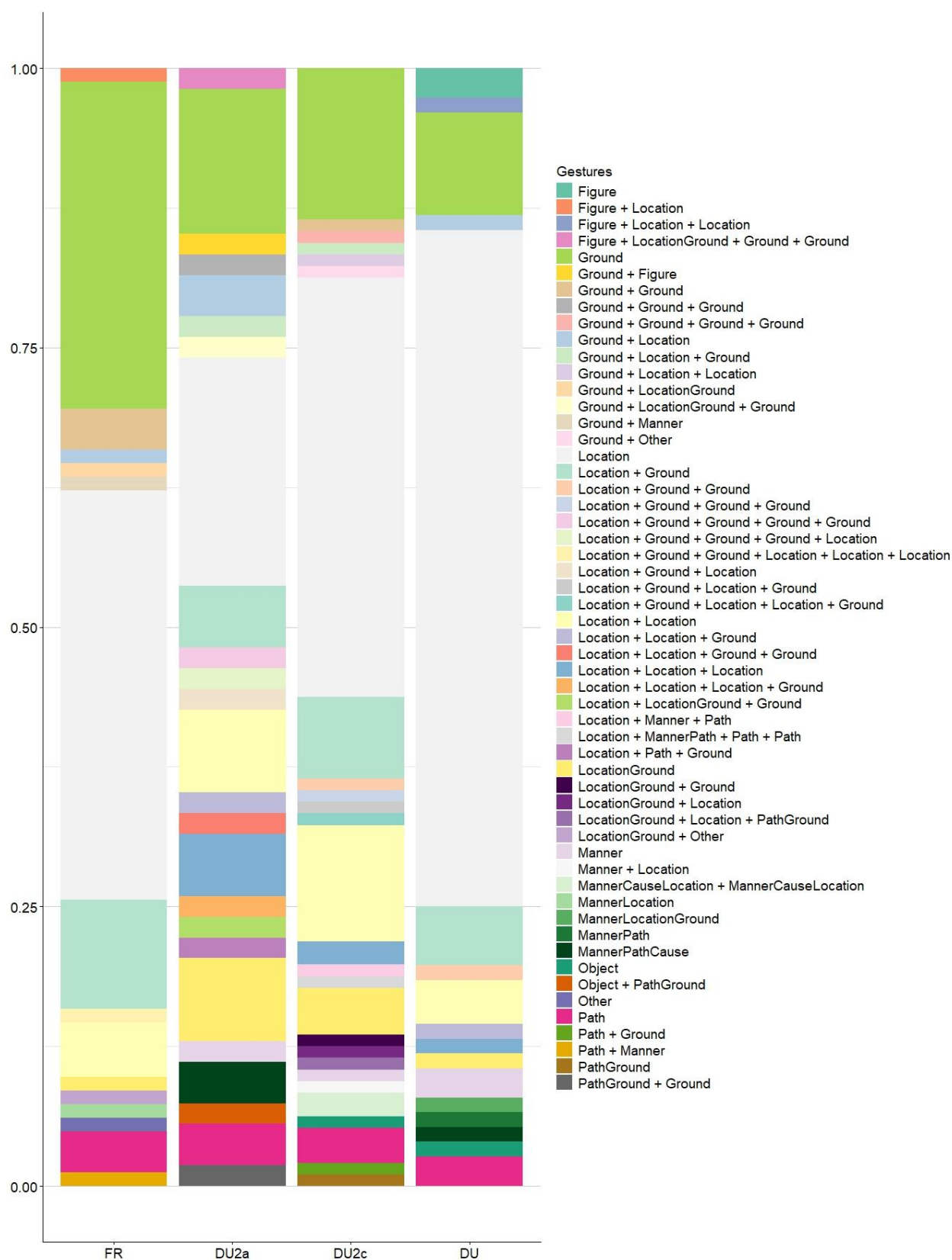


Figure 6.7.6: Combinations of gestures (LE)

6.7.3. Viewpoint

Figure 6.7.7 shows that 96.30% of the gestures used in the descriptions of location events in L1 French are made from the observer viewpoint. This proportion is similar in all groups (92.23% in DU2a, 90.67% in DU2c and 92.39% in L1 Dutch).

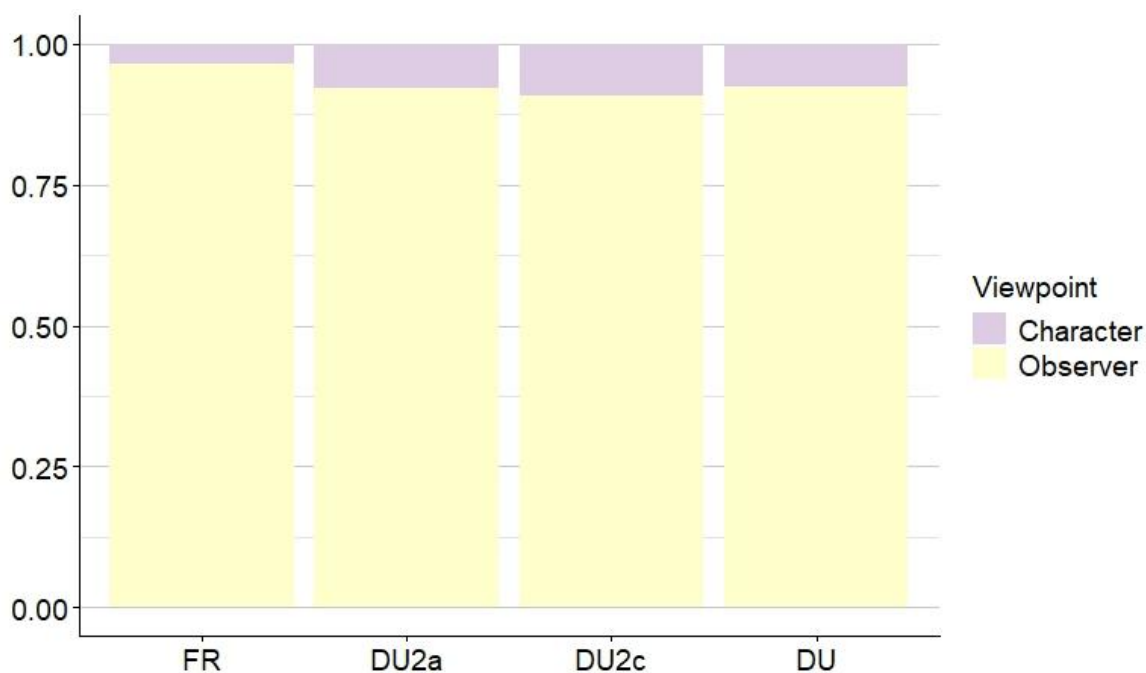


Figure 6.7.7: Gestural viewpoint across the four groups (LE)

6.7.4. Synchronization

Figure 6.7.8 shows that L1 French speakers made location gestures while uttering the satellite in 36.54% of cases, the figure in 21.15% and the verb in 21.15%. We see a similar pattern in L1 Dutch: location gestures co-occurred with the satellite in 33.85%, the figure in 18.46% and the verb in 18.46%. CLILa learners show a similar pattern (31.91% co-occurred with the satellite, 23.40% with the figure, 19.15% with the verb) and they also made such gestures during a(n) unfilled pause (8.25%). CLILc learners also made location gestures while uttering the satellite (32.50%) and the figure (23.75%) but they also did so while expressing the ground noun phrase (15%).

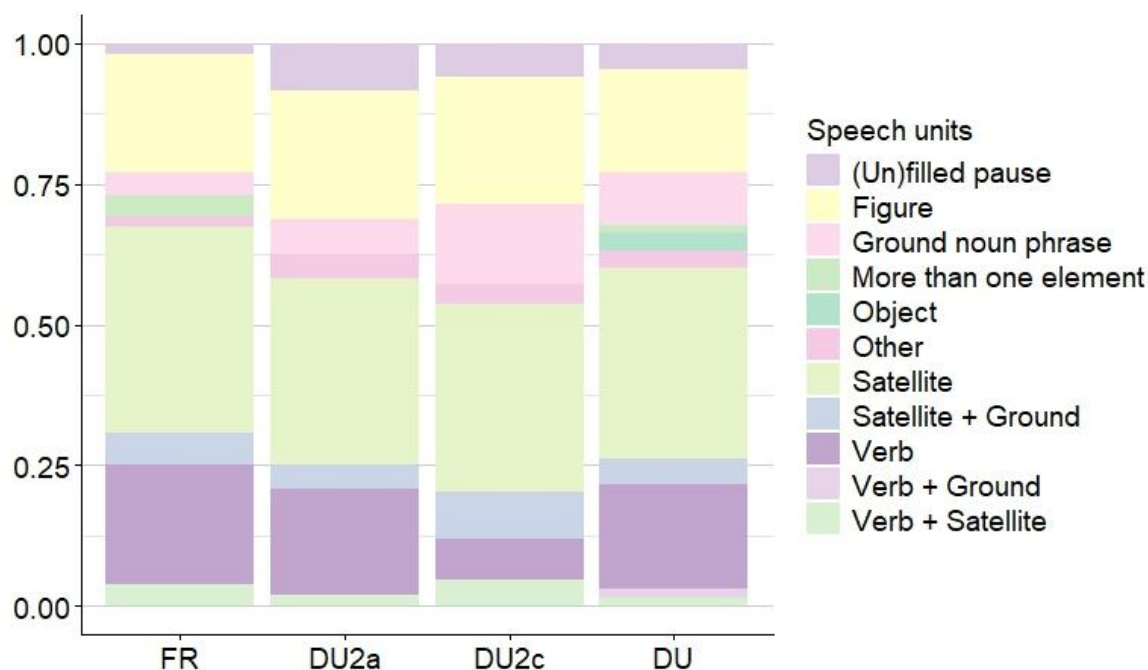


Figure 6.7.8: Distribution of the synchronization of location gestures (LE)

In Figure 6.7.9, we can observe that ground gestures co-occur with the ground noun phrase in 51.16% of cases in L1 French, 62.12% in DU2a, 52.63% in DU2c and 53.33% in L1 Dutch. In addition, they were produced at the same time as the satellite and ground in 16.28% of cases in L1 French, 10.81% in DU2a, 10.53% in DU2c and 13.33% in L1 Dutch.

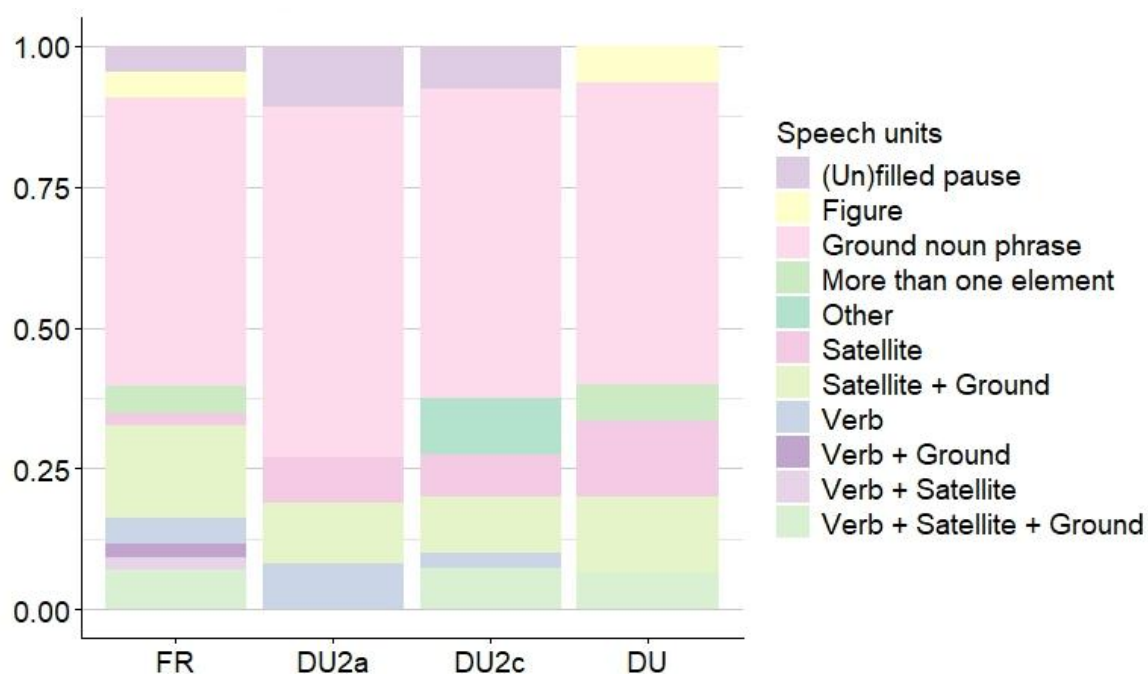


Figure 6.7.9: Distribution of the synchronization of ground gestures (LE)

6.7.5. Multimodal picture

Figure 6.7.10 displays the semantic components encoded in speech and the ones in gestures. It features the categories that count at least five occurrences, which represents 268 cases out of 308.

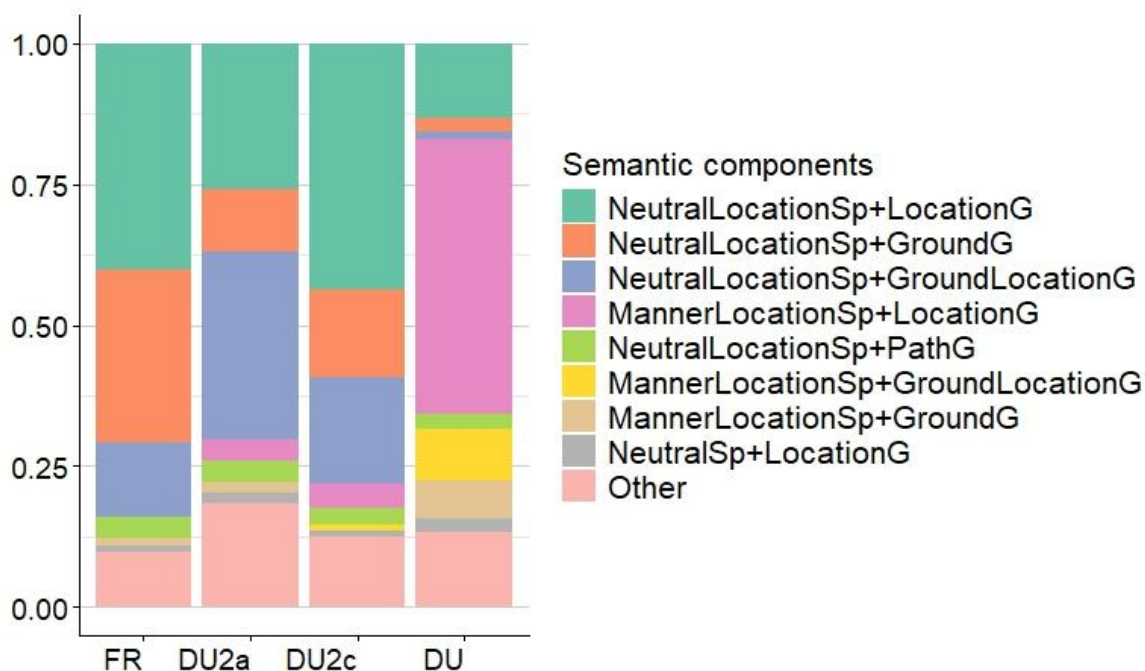


Figure 6.7.10: : Distribution of the semantic components in speech and gesture (LE)

The most frequent combination in L1 French and DU2c is the expression of neutral location in speech with a location gesture (respectively 40.24% and 43.75%). L1 French speakers also tend to express neutral location in speech together with a ground gesture (30.49%) and neutral location in speech with a location-ground gesture (13.41%) whereas CLIL learners seemed to prefer expressing neutral location in speech with a location-ground gesture (18.75%) than neutral location in speech with a ground gesture (15.63%). CLILa participants encoded neutral location in speech together with a location-ground gesture the most often (33.33%) followed by neutral location in speech with a location gesture (25.93%) and neutral location in speech with a ground gesture (11.11%). In contrast, L1 Dutch speakers expressed location with a manner component in speech together with a location gesture in 48.68% and neutral location in speech with a location gesture in 13.16%.

Figure 6.7.11 presents the multimodal constructions used to describe location events that count at least five occurrences, which represents 199 out of 308 cases. The other cases are included in “Other”.

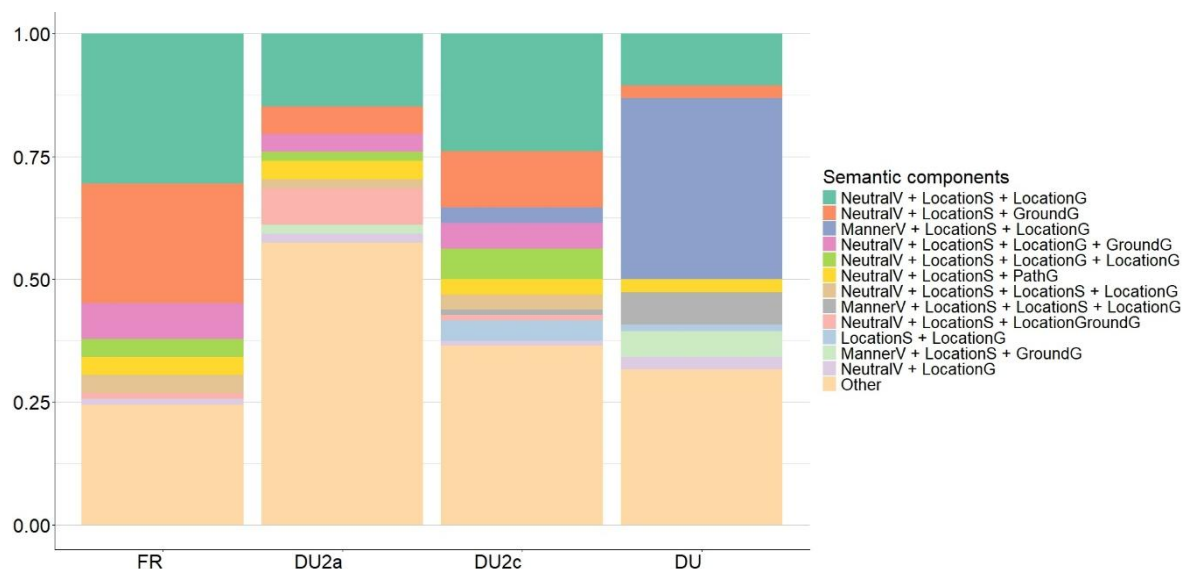


Figure 6.7.11: Distribution of the semantic components in verbs, satellites and gestures across the four groups (LE)

L1 French speakers used a neutral verb together with a location satellite and a location gesture in 30.49% of cases and a neutral verb with a location satellite and a ground gesture in 24.39%. In contrast, L1 Dutch speakers used a manner verb with a location satellite and a location gesture in 36.84% of cases and a neutral verb with a location satellite and location gesture in 10.53%. CLILa participants also tended to use a neutral verb with a location satellite and a location gesture (14.81%), and they also use a neutral verb together with a location satellite and a location-ground gesture (7.41%). Lastly, CLILc participants combined neutral verbs with location satellites and location gestures (25%) and neutral verbs with location satellites and ground gestures (11.46%). Learners show more variation than L1 speakers, and L1 French speakers show more variation than L1 Dutch speakers.

6.7.6. Zoom in on CLIL learners

Figure 6.7.12 illustrates the semantic components CLIL learners encoded in gestures in 2021 and 2023 to describe location events.

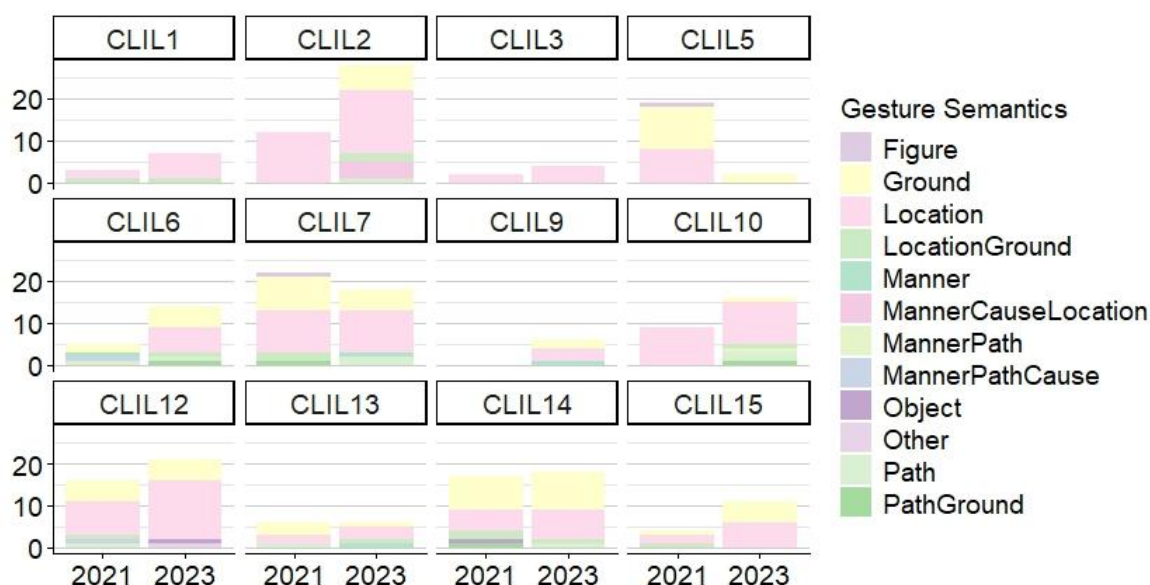


Figure 6.7.12: CLIL learners' gesture semantics in 2021 and 2023 (LE)

Once more, the data show that there is a lot of individual variation in terms of gesture numbers. Some participants located entities in gestures a lot while others barely did so. CLIL1, CLIL2, CLIL3, CLIL6, CLIL9, CLIL10, CLIL12 and CLIL15 used gestures more in 2023 than in 2021 when locating entities while CLIL5 and CLIL7 did so less and CLIL14 in a similar way.

All learners (except CLIL6 and CLIL9 in 2021 and CLIL5 in 2023) produced location gestures, and they did so more in 2023 than in 2021. In addition, ground gestures were rather prominent too even though not all learners used them.

Figure 6.7.13 presents the speech units with which L2 learners' location gestures co-occurred in 2021 and 2023.

The only tendency that can be identified here is that location gestures co-occur with satellites. However, this is only the case for CLIL2 in 2023 and partially the case for CLIL1, CLIL3 in 2023, CLIL5 in 2021, CLIL7 in 2023, CLIL10, CLIL12, CLIL13, CLIL14 and CLIL15 in 2023. In addition, they come together with the verb, figure, or with a combination of different elements.



Figure 6.7.13: Synchronization of location gestures in DU2 in 2021 and 2023 (LE)

6.7.7. Conclusion

This section has sketched the characteristics of the multimodal expression of location events in L1 French, L1 Dutch, and L2 Dutch.

For this type of event, iconic gestures were more frequent in L1 French than in DU2a, L1 Dutch, and DU2c. In contrast, deictic gestures were more frequently used in L1 Dutch than in DU2a, L1 French, and DU2c. Lastly, pragmatic gestures were more prominent in DU2a than in DU2c than in L1 French, and in L1 Dutch.

CLILa made fewer utterances than the three other groups, but there were again more referential gestures per utterance in L2 than in L1.

Concerning gesture semantics, location gestures were more frequently used by L1 Dutch speakers than by CLILc learners, CLILa learners, and by L1 French speakers. In contrast, ground gestures were more frequent in L1 French than in DU2a, DU2c and, L1 Dutch. Most gestures were made from the observer point of view.

Regarding synchronization, location gestures tended to co-occur with (1) the satellite and (2) the verb in all groups whereas ground gestures tended to co-occur with the ground noun phrase followed by the satellite and ground noun phrase. The different groups of speakers thus showed a similar behavior here.

Differences between L1 French and L1 Dutch speakers lie in the combination of semantic components in both speech and gestures. Specifically, L1 French speakers typically combine neutral verbs with location satellites and either location or ground gestures. In contrast, L1 Dutch speakers are inclined to pair manner verbs with location satellites and location gestures. L2 learners tend to pair neutral verbs with location satellites and location gestures, or, to a lesser extent, with location-ground gestures.

6.8. Conclusion to Chapter 6

This chapter has detailed how L1 French speakers, L1 Dutch speakers and CLIL French-speaking learners of Dutch express self-propelled motion events, intentional caused motion events, unintentional caused motion events, caused location events and location events in both speech and gestures.

It has shown that the differences between L1 French and L1 Dutch are less marked than expected. In fact, L1 Dutch and L1 French speakers tend to encode the same semantic components in gestures. In addition, no considerable differences were found in terms of viewpoint or boundary crossing gestures. The differences between the ways motion events are expressed in the two languages lie (1) in how semantic components are distributed across verbs, satellites and gestures and (2) in how gestures and speech units co-occur. This will be further discussed in Section 7.1.

In addition, it has demonstrated that L2 learners show their own behaviors. In fact, they tend to keep some French patterns, attempt to use Dutch patterns and use their own. This will be further discussed in Section 7.2

Chapter 7

Discussion

The aim of the present thesis was to describe how L1 French speakers, L1 Dutch speakers and CLIL French-speaking learners of Dutch express self-propelled motion events, intentional caused motion events, unintentional caused motion events and location events in both speech and gestures.

Overall, we have seen that there is a lot of variation both in the semantic components accumulated in path and in gestures. This section discusses the main results on the expression of motion events in L1 French and L1 Dutch (Section 7.1) and L2 Dutch (Section 7.2). In order to take all the descriptions into consideration, it is further divided into two sections, one focusing on speech only and one looking at the multimodal patterns used. Lastly, Section 7.3 is dedicated to implications for second language teaching.

7.1. Motion events in L1 French and L1 Dutch

7.1.1. In speech only

L1 French speakers tended to encode path in the verb to express self-propelled motion events. In addition, they also used manner verbs but to a lesser extent. They used a larger number of different path verbs than L1 Dutch speakers. Furthermore, L1 French speakers encoded only path in speech the most often and boundary crossing events were mostly expressed with a path verb. These results are in line with the typical pattern of verb-framed languages (e.g., Talmy 2000a, 2000b). Although there were occurrences describing a boundary crossing event with a manner verb, these were rather infrequent compared to the ones with a path verb.

L1 Dutch speakers tended to use manner verbs, manner verbs with a path prefix or path verbs with a path prefix to express self-propelled motion events. They did not use path verbs often. L1 French speakers used a bigger variety of manner verb if we only look at simple ones. However, Dutch has a large number of complex verbs in which manner is encoded in the root and path in a prefix. This is the category that has the most different verbs in L1 Dutch. The differences in the verb semantics between French and Dutch were significant. Contrary to L1 French speakers, L1 Dutch speakers tended to encode both manner and path in speech and expressed boundary crossing events with manner verbs. These findings are in line with the typical pattern of satellite-framed languages (e.g., Talmy 2000a, 2000b). Still, to a certain extent, L1 Dutch speakers also mentioned only path in speech, which shows the prominence of this semantic component in motion.

These results are also similar to Harr's (2012) who found that German speakers encoded manner in the verb and path in satellites while there was more variation in French: path was encoded in the verb and manner was sometimes omitted. Her data contained more manner verbs in German, which agreed with the thinking-for-speaking in terms of manner salience and provides evidence for a moderate view of linguistic relativity: "language affects production, as well as non-verbal responses but only when linguistic information must be processed (production, categorization in the presence of verbal stimuli" (Harr 2012: 332).

To express intentional caused motion events, L1 French speakers tended to encode manner-cause in the verb. L1 French speakers used fewer different verbs than L1 Dutch speakers but more manner-cause verbs if we only take simple verbs into account. L1 French speakers encoded either manner and cause in speech or manner, path and cause. In addition, they expressed boundary crossing events with path-cause verbs or manner-cause verbs. These findings are not in line with the typical pattern of verb-framed languages nor with the results of the study of Hendriks, Hickmann & Demagny (2008) who found that L1 French speakers used the complex causative constructions *faire* + path or manner verb. This construction was also found in the data but not as often as expected. A possible explanation for the encoding of manner in the verb is its salience in the events found in the stimuli. Most events described here did not require complex causative constructions, which shows that French also exhibits characteristics of satellite-framed languages.

L1 Dutch speakers used complex verbs in which manner and cause are expressed in the root and path in a prefix, manner-cause verbs and manner-path-cause verbs to express intentional caused motion events. Again, the differences in verb semantics between L1 French and L1 Dutch were significant. Similar to what was found for self-propelled motion events, we see that Dutch has a large number of complex verbs conveying manner and cause through the root and path through a prefix. L1 Dutch speakers encoded manner, path, and cause in the majority of cases and thus more often than in L1 French. They expressed boundary crossing events with manner-path-cause verbs with a prefix and manner-cause verbs. The findings confirm the satellite-framing of Dutch and its rich verbal repertoire.

To express unintentional caused motion events, L1 French speakers used a path-cause, a manner-path-cause or a manner-cause verb. L1 French speakers used fewer different verbs than L1 Dutch speakers. They tended to encode the three components in speech or just path and cause. Lastly, they expressed boundary crossing events mostly with path-cause verbs. This pattern corresponds to the one expected for verb-framed languages.

L1 Dutch speakers tended to encode manner, path and cause in verbs, with or without prefix. Once more, we can observe that Dutch as a variety of complex verbs. They encoded manner, path and cause in speech more frequently than the other groups, and they expressed boundary crossing events mostly with manner-path-cause verbs. These findings are also in line with the expected patterns of satellite-framed languages.

L1 French-speakers did not locate entities more frequently than L1 Dutch speakers (nor than learners), which contradicts Slobin's (1996a) claim that verb-framed languages speakers focus more on static scene setting than satellite-framed languages speakers. In contrast, it is in line with Cadierno's (2004) findings that Romance languages show mixed patterns in terms of processes and scene settings. Unsurprisingly, L1 French speakers located entities using neutral verbs together with location satellites while L1 Dutch speakers used manner verbs with location satellites. These findings are in line with previous studies on location events in French and Dutch (Lemmens & Perrez 2010; Lemmens & Perrez 2012; Lemmens & Perrez 2018)

Lastly, the density analysis conducted for both L1 groups and in all types of events revealed that the presence or absence of gestures does not have any impact on semantic density. In other words, L1 speakers encoded the same components in speech with and without gestures.

Overall, the thinking-for-speaking patterns in French and Dutch are confirmed by the abovementioned findings even though French exhibits more variation. The results are still in accordance with previous research that demonstrated that the patterns in French were less straightforward than those of Germanic languages.

7.1.2. In speech and co-speech gestures

This section aims at answering the first and second research questions. The first one was:

RQ1: Which semantic components do L1 Belgian French speakers encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

- H1: (a) L1 French speakers will mostly focus on path in both speech and gestures;
(b) L1 French speakers' path gestures will co-occur with the verb.

L1 French speakers tend to make path gestures when they describe self-propelled and unintentional caused motion events. They do not tend to make conflated gestures nor do they systematically make two separate gestures to express manner and path. The first part of the first hypothesis is thus confirmed except for intentional caused motion events. This could be accounted for by the fact that they tended to enact and embody the agent moving the figure.

L1 French speakers made path gestures predominantly while uttering the verb. This is in line with previous findings on Spanish (VF language) (Stam 2006; Stam 2008; Negueruela et al. 2004; Choi & Lantolf 2008).

In terms of semantic components encoded in multimodal utterances, L1 French speakers tend to express path only in speech and gestures or manner and path in speech together with a path gesture to express self-propelled motion events. When they describe

intentional caused motion events, they tend to make manner-path-cause gestures and to combine them with manner, path and cause in speech. In their descriptions of unintentional caused motion events, they express either path and cause in speech together with a path gestures or manner, path and cause in speech together with a path gestures. Lastly, to locate entities, they combine a neutral verb with a location satellite and a location gesture that co-occurs either with the satellite, the verb or the figure. This thus answers the first research question. Overall, the first hypothesis is confirmed except for intentional caused motion events where manner-path-cause gestures are more frequent than path gestures. This type of event elicits more character viewpoint gestures depicting manner and cause and sometimes path.

Let us now answer the second research question:

RQ2: Which semantic components do L1 Belgian Dutch speakers encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

H2: (a) L1 Dutch speakers will focus more on manner and pack manner and path more tightly in speech and gestures;

(b) L1 Dutch speakers' path gestures will co-occur with the satellite.

Surprisingly, L1 Dutch speakers show the same gestural behavior as L1 French speakers when they describe self-propelled motion events. In fact, they tend to make path-only gestures and do not tend to make neither conflated gestures nor two separate ones. The first part of H2 is thus partially refuted. While L1 Dutch speakers focus on manner and path in speech, they tend to only convey path in gestures. According to the Interface Hypothesis (Kita & Özyürek 2003), we would expect that they would make conflated gestures as they pack path and manner tightly in speech. Nonetheless, these gestures are very rare. These findings, therefore, challenge the Interface Hypothesis. A potential explanation for this discrepancy lies in the variation of stimuli and, consequently, in the nature of motion events. This hypothesis was first formulated based on data elicited using *Canary Row* (Freleng 1950) but then, most studies that support it used the short animated films *Tomato Man* (2001) as a stimulus. I argue that as these short films depict very specific and uncanonical manners of motion, speakers tend to express manner more systematically in gestures than they do when they describe events that are more

authentic. In addition, the speakers that took part in the present experiment did not know it was about motion events and that they were expected to describe them. They were just asked to retell the story, which implies that the focus was not on motion events. Both the oral descriptions and the gestures they made here were part of a larger narration. Hickmann, Hendriks & Gullberg (2011) also found that L1 adult English speakers mostly produced path gestures when describing voluntary motion. To elicit these data, they used short animated films featuring either animals (tiptoeing, walking, running, crawling etc.) or human beings (swimming, cycling, skating, crawling etc.). Their results indicated that English speakers encode more information in speech than in gesture, which is what I have found for L1 Dutch speakers. Their stimuli depicted real figures performing common (and less common but still plausible) motion events. I thus argue that while speakers of Germanic languages may make conflated gestures instead of two separate gestures as they will pack information tightly in both speech and gestures contrary to speakers of verb-framed languages, they will not automatically encode both manner and path in gestures when they describe self-propelled and unintentional caused motion events.

L1 Dutch speakers tend to combine manner and path in speech together with a path gesture when they describe self-propelled motion events, manner, path and cause both in speech and gestures when they express intentional caused motion events, manner and path in speech with a path gesture to describe unintentional caused motion events and manner and location in speech with a location gesture to locate entities. The first part of H2 is partially refuted: L1 Dutch speakers do tend to pack manner and path tightly in speech but as we have seen, they tend to make path-only gestures when they describe self-propelled and unintentional caused motion events. The first part of the second hypothesis is thus confirmed for intentional caused motion events and for the focus on manner in speech in all events.

Concerning the second part of H2, L1 Dutch speakers tend to make path gestures while uttering the satellites but it is not always the case. L1 Dutch participants did also so while expressing the verb. In their descriptions of unintentional caused motion events, their path gestures fell on the verb more frequently than on the satellite and they made their path gestures slightly more often with the verb and satellite when they described self-propelled motion events (only 2% difference). In contrast, Kellerman & van Hoof (2003)

found that L1 Dutch speakers' path gestures co-occurred with the satellite in about 55% of cases whereas here they barely do so in 22.14% of cases in the case of self-propelled motion events, 20.69% in the case of intentional caused motion events and 15.63% in the context of unintentional caused motion events. Kellerman & van Hoof (2003) considered both satellite and satellite phrase, which would correspond to satellite and satellite + ground in the present study. This partially accounts for the difference. The analysis was taken a step further and looked at the influence of the semantic component encoded in the verb on the synchronization of path gestures in the context of self-propelled motion events. L1 Dutch speakers' path gestures co-occurred more often with the satellite when the verb conveys manner and less often with the verb + satellite but the difference was less marked than I expected. More data would be needed to assess this difference as L1 Dutch speakers did not use path verbs very often.

Caused location events are not incorporated in the discussion above as the amount of data was very limited. However, I think it is still worth mentioning that both L1 French speakers and Dutch speakers predominantly incorporated the object in their gestures (i.e., L1 French participants made manner-path-cause gestures rather than only path gestures). This discrepancy with earlier studies on caused (or placement) events might also be due to the stimuli. The caused motion events identified in *Tweet Zoo* (Freleng 1957) were not prototypical caused location events compared to the ones used in the studies on placement events. I considered them as such here because they fit into the definition provided by Gullberg (2009b: 121): "caused location is subtype of "caused motion where an agent causes an object to move to an end location while maintaining (manual) control over it until it reaches its final destination" as because of the participants' verb choices.

Lastly, my data confirm Parrill's (2011) findings on the type of semantic components encoded in character viewpoint and observer viewpoint gestures. In fact, character viewpoint gestures depicted manner, manner-cause or manner, path and cause while observer viewpoint gestures were mostly used to express path, location and ground.

7.2. Motion events in L2 Dutch

7.2.1. In speech

To describe self-propelled motion events, L2 Dutch speakers mostly used path verbs both in 2021 and 2023. They also used manner verbs more frequently than L1 Dutch speakers but the complex verbs in which manner is encoded in the root and path in a prefix rarely occurred in L2 data. A more fine-grained analysis of the verbs used in L2 Dutch revealed that they used very few different verbs in comparison with the L1 speakers. In fact, they used the same few verbs (e.g., *gaan* and *lopen*) all over again. In addition, L2 learners seem to find it difficult to combine semantic components in an utterance.

If we look at each learner individually, we see that there is no linear path. Some of them uttered more manner verbs in 2023, others fewer path verbs and others more path verbs. Overall, they did not use more verbs in 2023 than in 2021. The learners who used a larger variety did so in both years and those who barely used five different verbs did so in 2021 and 2023.

The differences in verb semantics between L2 Dutch and L1 Dutch on the one hand and L2 Dutch and L1 French on the other hand were significant (potentially partially due to the extra categories with wrong forms) but no significant difference was found between the learners in 2021 and themselves two years later. Overall, while they seem to be aware of the manner character of Dutch, they still tend to focus on path only as in L1 French and do not tend to encode both components in speech as L1 Dutch speakers do. Instead, they tend to encode only manner, which may be part of their developmental pattern. This suggests that their reconceptualization scenario is a mix of the transfer and the creative/hybrid ones (Treffers-Daller & Tidball 2015). Only the learners with an advanced proficiency level (CLIL1 and CLIL7) distinguish themselves from the group as they encoded both components, which suggests that this stage could still come for the others even though we have to keep in mind that these two participants went to a Dutch-speaking school for two to three years which means that they were exposed to much more input than the others. These findings are in line with previous research on L2 thinking-for-speaking which found that the L1 keeps influencing the L2 pattern and that

learners show both features from their first and target languages (e.g., Cadierno 2004; Larrañaga et al. 2012) and also confirm the need to teach motion verbs in second language classes (Stam et al. 2023).

When they expressed intentional caused motion events, L2 Dutch learners tended to use cause verbs, i.e., common verbs that did not give any information on manner or path. They did so less frequently in 2023 where they used manner-cause verbs more frequently. However, the difference between 2021 and 2023 was not significant. Nevertheless, the differences between (1) L1 French and L2 Dutch and (2) L1 Dutch and L2 Dutch in terms of verb semantics were significant. This shows that they do not behave as L1 speakers of either language. Similarly to the finding on self-propelled motion events, the analysis of the number of different verbs revealed that they use fewer verbs than L1 speakers. Still, they used more different verbs in 2023 than in 2021. L2 learners tended to express only cause in speech and especially in 2021. In 2023, they also encoded manner, path and cause and manner and cause, next to only path and path and cause.

In their descriptions of unintentional caused motion events, L2 learners tended to encode path-cause in verbs as L1 French speakers or they showed their own behavior by using path verbs. The latter can be considered as a simplifying strategy. Again, they use very few different verbs in comparison with L1 speakers and did not manage to encode manner, path and cause in speech as L1 speakers did (and L1 Dutch speakers more often than L1 French speakers). They expressed boundary crossing events mostly with path-cause verbs as L1 French speakers and with path verbs. Here again, they show a mix of the transfer and creative reconceptualization scenarios (Treffers-Daller & Tidball 2015). Lastly, there was a lot of variation across learners.

Most learners located entities using neutral verbs both in 2021 and 2023. Here, they clearly behaved as L1 French speakers and exhibit the transfer scenario. Even the learners with a more advanced level scarcely used posture verbs (except for CLIL1), which suggests that the subtle nuances of these verbs remain difficult, and which confirms Lemmens & Perrez's (2010, 2012, 2018) previous findings.

Lastly, the density analysis conducted for 2021's and 2023's data and in all types of events revealed that the presence or absence of gestures does not have any impact on

semantic density. In other words, L2 speakers encoded the same components in speech with and without gestures.

Overall, CLIL learners' thinking-for-speaking patterns are to be situated between the French and Dutch ones and they show their own peculiarities. On the one hand, there are clear cases of transfers, and on the other hand, there are traces of developmental patterns. Altogether, the sum of these two elements form the learners' interlanguage.

7.2.2. In speech and co-speech gestures

This section aims at answering the third and fourth research questions, namely:

RQ3: Which semantic components do French-speaking learners of Dutch in a Content and Language Integrated Learning (CLIL) context encode in (1) the verb, (2) the satellite, and (3) co-speech gestures, and how are these elements integrated?

H3: (a) CLIL learners will keep encoding path in speech and gestures at the beginner level and partially at the intermediate level;
(b) CLIL learners' path gestures will co-occur with both the verb and satellite.

RQ4: Over a period of two years, did the L2 multimodal thinking-for-speaking pattern of French-speaking learners of Dutch in a Content and Language Integrated Learning (CLIL) context shift towards the Dutch thinking-for-speaking pattern?

H4: (a) Yes, CLIL learners will encode more semantic components;
(b) Yes, CLIL learners' gestures will be more similar to L1 Dutch speakers'.

The total number of gestures per utterance is higher in L2 than in L1, and so is the number of referential gestures, no matter the type of event. In fact, L2 learners made pragmatic gestures much more often than L1 speakers. These gestures mainly occurred in cases where learners were looking for a word (word-searching gestures). The proportions of referential versus non-referential gestures were consistent across the types of events. In other words, L2 learners showed consistent behavior and no type of

events seemed easier to them. In addition, there is more variation in the combinations of gestures in L2 than in L1. While L1 speakers tend to produce only one gesture per utterance, L2 learners tend to accumulate them.

When expressing self-propelled motion events L2 learners tended to make one manner gesture only, and they did so more than L1 speakers who used one path gesture only and more in 2023 than in 2021. Character viewpoint gestures were more frequent in DU2c, and they depicted manner. CLILa learners made path gestures while uttering the verb, followed by the satellite while CLILc learners' path gestures co-occurred with the satellite more often than with the verb. In this matter, CLIL learners and especially CLILc (as the proportions are more similar to the L1 pattern) seem to be gravitating toward the Dutch pattern, that is path-gestures co-occurring slightly more often with the verb than with the satellite, as L1 French speakers' path gestures mostly co-occurred with the verb. The synchronization of path gestures when the utterance features a path verb confirms this tendency even though L1 Dutch speakers also aligned their path gestures with both the verb and satellite and the learners barely did so. The synchronization of path gestures when the utterance features a manner verb and the synchronization of manner gestures also suggest that L2 learners were undergoing a shift from their L1 pattern to their L2 pattern. Nonetheless, the analysis of the combinations of semantic components in speech and gestures reveals that L2 learners show their own behavior and little development in two years. They tend to encode path only even though they do so to a lesser extent than L1 French speakers. They are still far from the main pattern in Dutch which is manner and path in speech and path in gestures.

When uttering intentional caused motion events, L2 learners made conflated gestures conveying manner, path and cause less often than L1 speakers. In contrast, they produced manner-cause gestures and depicted objects more often than L1 speakers and made path gestures less frequently. Here again, they show their own pattern as they mostly use cause verbs and do not accumulate semantic components in speech while making different gestures than both groups of L1 speakers.

To express unintentional caused motion events, CLIL learners tended to encode path and CLILc learners did it slightly more often than L1 speakers. In addition, they made ground gestures more often than L1 speakers. Concerning the co-occurrence of speech units and

path gestures, L2 learners showed their own behaviors: in 2021, their path gestures co-occurred with the verb but to a lesser extent than L1 speakers of both languages, with satellites similarly to L1 Dutch speakers and with unfilled pauses. In 2023, their path-gestures co-occurred less frequently with unfilled pauses, less frequently with verbs and more frequently with satellites (even more than in L1 Dutch). In addition, their path gestures tended to co-occur with other elements and several ones. Lastly, in terms of combinations of semantic components, L2 learners show their own behavior: as L1 French speakers, they tend to encode path and cause in speech and path in gestures, but their second most frequent combination is path only in both speech and gestures, as for self-propelled motion events. This category is much less frequent in L1.

Lastly, to locate entities, L2 learners tend to make location gestures but less frequently than L1 French speakers and more frequently than L1 Dutch speakers. In addition, L2 learners made ground gestures more frequently than L1 Dutch speakers. CLILc learners made location gestures more frequently than L1 French speakers and CLILa learners and ground gestures less frequently than L1 French speakers and CLILa learners, which brings them closer to the Dutch pattern. In terms of the synchronization of gestures, there is some variation but overall, the four groups made location gestures while uttering the satellite, the figure, or the verb (except in DU2c). Finally, the main difference between L1 Dutch speakers and L2 learners is related to the combinations of semantic components in both speech and gestures. As demonstrated earlier, L2 Dutch speakers tend to locate entities using neutral verbs whereas L1 Dutch speakers use posture verbs. Consequently, the multimodal constructions used in L1 and L2 are different as L1 speakers tend to combine a posture verb with a location satellite and a location gesture where L2 learners combine a neutral verb with a location satellite and location gesture.

The first part of H3 is confirmed except for intentional caused motion events where they encode manner and cause. However, although the hypothesis initially attributed this to L1 transfer, the data showed that L1 Dutch speakers also predominantly encoded path in gestures. Therefore, it can be said that the data show that L2 Dutch speakers did make path gestures but without interpreting them as a negative transfer from their L1. In addition, they also produced more manner-only gestures than L1 speakers of both groups. This could be considered as a developmental pattern to show that they are aware of the importance of expressing manner in Dutch without yet not knowing how to do it

in speech. The second part of the third hypothesis is confirmed as well even though they also have their own peculiarities and make some referential gestures during pauses or other elements.

The first part of the fourth hypothesis is refuted as learners kept encoding few components in 2023 as well. However, the closer analysis revealed that some of them began to do it. Lastly, the second part of the fourth hypothesis is partially confirmed as they tend to synchronize their gestures more similarly to L1 Dutch speakers in 2023 than in 2021 and tend to encode path as well. However, in the case of intentional caused motion events, they show their own behavior and do not tend to conflate manner-cause and path in one gesture as often as L1 speakers.

Overall, while they show their own behavior or a behavior similar to L1 French speakers in speech, their gestural behavior seems to be gravitating towards the Dutch pattern. This is a rather unexpected conclusion. In fact, previous research has shown that the L1 multimodal thinking-for-speaking pattern is entrenched (Kellerman & van Hoof 2003; Negueruela et al. 2004; Stam 2006; Yoshioka & Kellerman 2006; Stam 2010; Gullberg 2011; Alferink & Gullberg 2014) whereas here, the learners show discrepancies between their verbal and gestural behaviors. This may be related to the fact that L1 Dutch speakers make path gestures as L1 French speakers do. L2 learners may have transferred this from their L1 without knowing it was a positive transfer. Concerning the co-occurrence of speech and gestures, L2 learners and especially CLILc learners seemed to be gravitating towards a Dutch pattern. However, we have to keep in mind that they tended to make several gestures per utterance including several gestures conveying the same semantic components, which suggests that they did not totally behave as L1 Dutch speakers. In fact, the learners' producing several path gestures per utterance partially explains why some of them coincide with satellites, as observed in L1 Dutch. A closer qualitative analysis is needed to ascertain to which extent their pattern is getting closer to the Dutch one or if they show their own pattern. It can thus be concluded that their thinking-for-speaking pattern is somewhere between the French and Dutch ones. In the same vein that L2 learners have their own interlanguage, it could be postulated that they also have an intergestural system, showing features of their L1, their L2 and their own.

7.3. Implications for second language teaching

As demonstrated in Section 3.4, motion events and gestures receive very little attention in official documents guiding and governing second language teaching even though these two elements are central in our daily life. Furthermore, the results of the present thesis have proved how necessary it is to include them in teaching curricula. In fact, describing motion events in a foreign language is complicated and even more when the target and source languages belong to different typological categories. In addition, gesturing in a second language cannot be limited to the use of gestures as a compensation strategy as advocated by the official documents. Instead, it is important to make learners aware of the communicative functions of gestures, how these can contribute to convey information and how they can alter communication when they are not used efficiently.

In terms of teaching methods, Filipovic & Vidakovic (2010) suggested that teaching should include other aspects of grammar such as what is more natural in the target language. Statistical learning allows learners to approximate the L2 patterns but is not enough to master complex rules like the boundary crossing constraint (Treffers-Daller & Calude 2015). In fact, they will not come across what they should not say in naturalistic input, which still leaves room for incorrect uses. Laws, Attwood & Treffers-Daller (2022) compared different teaching methods and found that the most efficient one was a combination of explicit instructions about the target structures and the common errors, tasks where they had to process the structures to find right and wrong answers and tasks where they used the target structures to express personal opinions or beliefs, without right or wrong answers. In other words, tasks that require them to read or listen to the target structures but not produce them themselves first and production tasks that are not directly targeted at the structures.

Lastly, Stam et al. (2023) conducted a study to determine whether the instruction of the linguistic patterns of L2 thinking-for-speaking would have an impact on the shift from the multimodal thinking-for-speaking pattern of the L1 to the multimodal thinking-for-speaking pattern of the L2. They used the Concept-Based Language Instruction and depictions of concept and taught the learners for eight hours. The results were promising. L2 learners produced more manner verbs and clauses with several path components in L2 English after the instruction, and their path gestures fell more often

on the satellite during the posttest as during the pretest as in L1 English. However, they kept following their L1 thinking-for-speaking pattern as they preferred using manner only gestures than manner-path gestures (Stam et al. 2023).

Conclusion & Further Research

The present thesis provides a multimodal and longitudinal investigation of how motion events are expressed in speech and co-speech gestures by L1 French speakers, L1 Dutch speakers, and CLIL French-speaking learners of Dutch (L2). It fills a significant gap in the literature by focusing on the underexplored, yet highly relevant in the Belgian context, domain of motion event expression in these specific language groups, especially L2 Dutch acquisition by French-speaking learners in a CLIL context.

This thesis has demonstrated that thinking-for-speaking patterns in motion event descriptions differ systematically between L1 French and L1 Dutch, both in speech and in co-speech gesture, and that these differences are not simply mirrored in L2 Dutch. Building on a context where motion events have received relatively little attention in L1 and L2 French and Dutch beyond the subdomains of (caused) location events, the study has shown that CLIL learners of Dutch do not merely approximate one L1 pattern or straightforwardly transfer their L1 pattern. Instead, they transfer specific features from L1 French while simultaneously developing their own multimodal pattern in L2 Dutch, with distinctive configurations of manner and path in language and gesture. In other words, L2 learners exhibit an emergent, learner-specific thinking-for-speaking pattern that cannot be fully captured by traditional binary contrasts between verb-framed and satellite-framed languages. They produce more manner gestures, more referential and more pragmatic gestures overall than L1 speakers. Their gesture-speech alignment shifts over time toward Dutch-like patterns but does not fully converge. Taken together, these developmental patterns motivate the proposal of an “intergesture” system, analogous to Selinker’s (1972) concept of interlanguage.

These findings invite a reconceptualization of L2 motion expression as a genuinely multimodal and dynamic phenomenon. Rather than viewing learners as moving along a linear path from L1 to L2 norms, the results suggest that they construct hybrid patterns in which linguistic and gestural resources are reorganized over time. This perspective further suggests that gesture is not simply a by-product of speech but an integral component of conceptualization in an L2. By documenting how learners' multimodal patterns evolve over time in an authentic CLIL setting, the thesis therefore contributes to research on second language thinking-for-speaking and provides further evidence for the need to consider speech and gesture jointly when investigating L2 conceptualization.

By providing a longitudinal, multimodal analysis of motion events in L1 French, L1 Dutch and L2 Dutch, this thesis also fills several gaps in the literature. First, it extends prior work on motion description, which has largely focused on isolated subdomains, by systematically comparing a broad range of motion event types across two typologically distinct languages in both speech and gesture. Second, it advances research on second language thinking-for-speaking by documenting the development of learners' multimodal patterns over time in an authentic CLIL setting. Third, it contributes to applied linguistics and language pedagogy by pointing to specific areas, such as the expression of manner and path, the use of satellite structures, and the alignment of gestures with key semantic components, where instruction can support learners in moving toward more target-like multimodal patterns.

At the same time, several avenues remain open for future research. The picture developed in this thesis could be refined by distinguishing more finely between source, goal and location in speech, incorporating additional visual cues such as head movements, which were observed in the dataset but not further analyzed, and including more advanced learners to trace later stages of development. Such research would make it possible to investigate whether the developmental patterns identified here continue to evolve toward greater convergence with the target language or whether some learner-specific features remain stable over time.

The findings also have implications for L2 teaching. The current study critically evaluates the minimal attention given to motion events and gestures in official L2 teaching curricula and frameworks and advocates for their explicit inclusion in language instruction to better support the acquisition of target-like multimodal communicative

competence. The thesis underscores that pedagogy for motion events in L2 Dutch cannot be reduced to teaching vocabulary and syntactic patterns alone. It calls for instruction that explicitly targets the conceptual focus of the target language: designing tasks that require learners to attend to manner and path, encouraging them to experiment with satellite constructions, and creating reflective activities in which learners compare their own multimodal productions to those of L1 speakers. By making these conceptual dimensions visible and discussable, teachers can help learners move beyond literal transfer from L1 French and foster the development of more flexible, L2-appropriate ways of conceptualizing and expressing motion.

One possible way of implementing such an approach would be to develop a learning sequence based on the situation-problem framework (*canevas par situation-problème*) (Simons 2018). Initially, learners would be required to describe motion events, and these descriptions would be recorded, serving as a pretest for the researcher (cf. Simons' (2018) *mise en perspective*). Subsequently, learners would observe how native speakers of the target language perform the same task, enabling them to recognize the gap and identify the resources they lack (cf. Simons' (2018) *état des ressources*). The subsequent phase would involve elucidating how motion events are articulated in Dutch, with learners engaging in exercises that progressively become more open-ended. These exercises would include tasks where learners can freely use the target structures in conversation without directly focusing on these structures, as suggested by Laws, Attwood & Treffers-Daller (2022). Ultimately, learners would repeat the initial task, which would serve as a post-test for the researcher, followed by a second post-test conducted several weeks later. Research on such teaching methods in this specific domain would be needed to assess their effectiveness and determine to what extent explicit attention to the conceptualization of motion can foster more target-like multimodal communicative competence in L2 Dutch.

REFERENCES

- Alferink, Inge & Marianne Gullberg. 2014. French–Dutch bilinguals do not maintain obligatory semantic distinctions: Evidence from placement verbs. *Bilingualism: Language and Cognition* 17(1). 22–37. <https://doi.org/10.1017/S136672891300028X>.
- Alibali, Martha W. 2005. Gesture in Spatial Cognition: Expressing, Communicating, and Thinking About Spatial Information. *Spatial Cognition & Computation* 5(4). 307–331. https://doi.org/10.1207/s15427633scc0504_2.
- Alibali, Martha W., Sotaro Kita & Amanda J. Young. 2000. Gesture and the process of speech production: We think, therefore we gesture. *Language and Cognitive Processes* 15(6). 593–613. <https://doi.org/10.1080/016909600750040571>.
- Allen, Shanley, Aslı Özyürek, Sotaro Kita, Amanda Brown, Reyhan Furman, Tomoko Ishizuka & Mihoko Fujii. 2007. Language-specific and universal influences in children’s syntactic packaging of Manner and Path: A comparison of English, Japanese, and Turkish. *Cognition* 102(1). 16–48. <https://doi.org/10.1016/j.cognition.2005.12.006>.
- Alonso Alonso, Rosa. 2016. Cross-linguistic influence in the interpretation of boundary crossing events in L2 acquisition. *Review of Cognitive Linguistics* 14(1). 161–182. <https://doi.org/10.1075/rcl.14.1.07alo>.
- Anastasio, Simona. 2018. *L’expression de la référence à l’espace en italien et en français L2. Une étude comparative*. Paris & Naples: Université de Paris 8 & Università degli Studi di Napoli “Frederico II.”
- Anastasio, Simona. 2023. Motion event construal in L2 French and Italian: from acquisitional perspectives to pedagogical implications. *International Review of Applied Linguistics in Language Teaching* 61(1). 37–60. <https://doi.org/10.1515/iral-2022-0046>.
- Aurnague, M. 2008. Qu’est-ce qu’un verbe de déplacement ? : critères spatiaux pour une classification des verbes de déplacement intransitifs du français. In *Congrès Mondial de Linguistique Française 2008, 1905–1917*. Paris, France: EDP Sciences. <https://doi.org/10.1051/cmlf08041>.
- Aurnague, Michel. 2024. Telic motion constructions in French and the notion of tendentiality. *Lingua* 311. 103791. <https://doi.org/10.1016/j.lingua.2024.103791>.
- Aveledo, Fraibet & Panos Athanasopoulos. 2023. Bidirectional cross-linguistic influence in motion event conceptualisation in bilingual speakers of Spanish and English. *International Review of Applied Linguistics in Language Teaching* 61(1). 13–36. <https://doi.org/10.1515/iral-2022-0179>.
- Bassetti, Benedetta & V. Cook. 2011. Language and cognition: The second language user. In V. J. Cook & B. Bassetti (eds.), *Language and Bilingual Cognition*, 143–190. Oxford: Psychology Press.

- Beattie, Geoffrey & Heather Shovelton. 1999. Mapping the Range of Information Contained in the Iconic Hand Gestures that Accompany Spontaneous Speech. *Journal of Language and Social Psychology*. SAGE Publications Inc 18(4). 438–462. <https://doi.org/10.1177/0261927X99018004005>.
- Bekke, Marlijn ter, Aslı Özyürek & Ercenur Ünal. 2022. Speaking but not gesturing predicts event memory: a cross-linguistic comparison. *Language and Cognition* 14(3). 362–384. <https://doi.org/10.1017/langcog.2022.3>.
- Beliën, Maaïke. 2012. Dutch manner of motion verbs: Disentangling auxiliary choice, telicity and syntactic function. *cogl* 23(1). 1–26. <https://doi.org/10.1515/cog-2012-0001>.
- Benazzo, Sandra, Monique Flecken & Efstathia Soroli (eds.). 2012. Typological perspectives on second language acquisition: ‘Thinking for Speaking’ in L2. *Language, Interaction and Acquisition* 3(2).
- Berman, Ruth Aronson, Dan Isaac Slobin, Sven Strömquist & Ludo Th Verhoeven (eds.). 1994. *Relating events in narrative*. Hillsdale, N.J: L. Erlbaum Associates.
- Brown, Amanda. 2008. Gesture viewpoint in Japanese and English: Cross-linguistic interactions between two languages in one speaker. *Gesture* 8(2). 256–276. <https://doi.org/10.1075/gest.8.2.08bro>.
- Brown, Amanda. 2015. Universal Development and L1-L2 Convergence in Bilingual Construal of Manner in Speech and Gesture in Mandarin, Japanese, and English. *The Modern Language Journal*. [National Federation of Modern Language Teachers Associations, Wiley] 99. 66–82.
- Brown, Amanda & Jidong Chen. 2013. Construal of Manner in speech and gesture in Mandarin, English, and Japanese. *Cognitive Linguistics* 24(4). 605–631. <https://doi.org/10.1515/cog-2013-0021>.
- Brown, Amanda & Marianne Gullberg. 2008. Bidirectional Crosslinguistic Influence in L1-L2 Encoding of Manner in Speech and Gesture: A Study of Japanese Speakers of English. *Studies in Second Language Acquisition* 30(02). 225–251. <https://doi.org/10.1017/S0272263108080327>.
- Brown, Amanda & Marianne Gullberg. 2010. Changes in encoding of path of motion in a first language during acquisition of a second language. *Cognitive Linguistics* 21(2). <https://doi.org/10.1515/COGL.2010.010>.
- Brown, Amanda & Marianne Gullberg. 2013. L1–L2 convergence in clausal packaging in Japanese and English. *Bilingualism: Language and Cognition* 16(3). 477–494. <https://doi.org/10.1017/S1366728912000491>.
- Butterworth, Brian & Uri Hadar. 1989. Gesture, speech, and computational stages: A reply to McNeill. *Psychological Review* 96(1). 168–174. <https://doi.org/10.1037/0033-295X.96.1.168>.
- Cadierno, Teresa. 2004. *Expressing Motion Events in a Second Language: a Cognitive Typological Perspective*. *Cognitive Linguistics, Second Language Acquisition, and Foreign Language Teaching*. De Gruyter Mouton. <https://www.degruyter.com/document/doi/10.1515/9783110199857.13/html>. (26 April, 2021).

- Cadierno, Teresa & Lucas Ruiz. 2006. Motion events in Spanish L2 acquisition. *Annual Review of Cognitive Linguistics* 4(1). 183–216.
- Cassell, Justine, David McNeill & Karl-Erik McCullough. 1999. Speech-gesture mismatches: Evidence for one underlying representation of linguistic and nonlinguistic information. *Pragmatics & Cognition* 7(1). 1–34. <https://doi.org/10.1075/pc.7.1.03cas>.
- Cenoz, Jasone. 2003. The role of typology in the organization of the multilingual lexicon. In Jasone Cenoz, Britta Hufeisen & Ulrike Jessner-Schmid (eds.), *The multilingual lexicon*. New York Boston Dordrecht London Moscow: Kluwer Academic Publishers.
- Cenoz, Jasone, Britta Hufeisen & Ulrike Jessner-Schmid (eds.). 2001. *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives* (Bilingual Education & Bilingualism). Blue Ridge Summit, PA: Multilingual Matters. <https://doi.org/10.21832/9781853595509>.
- Chenu, Florence & Harriet Jisa. 2006. Caused motion constructions and semantic generality in early acquisition of French. In *Constructions in acquisition*, 233–261. Stanford: CLSI Productions.
- Choi, Soojung & James P. Lantolf. 2008. Representation and Embodiment of Meaning in L2 Communication: Motion Events in the Speech and Gesture of Advanced L2 Korean and L2 English Speakers. *Studies in Second Language Acquisition* 30(02). <https://doi.org/10.1017/S0272263108080315>.
- Cook, Vivian (ed.). 2003. Introduction: The Changing L1 in the L2 User's Mind. In *Effects of the Second Language on the First*, 1–18. Multilingual Matters. <https://doi.org/10.2307/jj.27710980>.
- Cook, Vivian. 2016a. Transfer and the Relationships Between the Languages of Multi-Competence. In Rosa Alonso Alonso (ed.), *Crosslinguistic influence in second language acquisition* (Second Language Acquisition 95), 24–37. Bristol ; Buffalo: Multilingual Matters.
- Cook, Vivian. 2016b. Premises of multi-competence. In Vivian Cook & Li Wei (eds.), *The Cambridge Handbook of Linguistic Multi-Competence*, 1–25. 1st edn. Cambridge University Press. <https://doi.org/10.1017/cbo9781107425965.001>.
- Cook, V.J. 1991. The poverty-of-the-stimulus argument and multicompetence. *Second Language Research*. Sage Publications, Ltd. 7(2). 103–117.
- Council of Europe. 2020. *Common European Framework of Reference for Languages: Companion Volume*. Namur: Council of Europe.
- Dargue, Nicole, Naomi Sweller & Michael P. Jones. 2019. When our hands help us understand: A meta-analysis into the effects of gesture on comprehension. *Psychological Bulletin*. US: American Psychological Association 145(8). 765–784. <https://doi.org/10.1037/bul0000202>.
- De Angelis, Gessica. 2005. Multilingualism and Non-native Lexical Transfer: An Identification Problem. *International Journal of Multilingualism* 2(1). 1–25. <https://doi.org/10.1080/17501220508668374>.
- De Angelis, Gessica & Larry Selinker. 2001. Interlanguage Transfer and Competing Linguistic Systems in the Multilingual Mind. In Jasone Cenoz, Britta Hufeisen &

- Ulrike Jessner-Schmid (eds.), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives* (Bilingual Education & Bilingualism), 42–58. Blue Ridge Summit, PA: Multilingual Matters. <https://doi.org/10.21832/9781853595509>.
- De Ruiter, Jan Peter. 2000. The production of gesture and speech. In David McNeill (ed.), *Language and Gesture*, 284–311. 1st edn. Cambridge University Press. <https://doi.org/10.1017/CBO9780511620850.018>.
- Dell, Gary S. 1995. Speaking and Misspeaking. In Lila R. Gleitman & Mark Liberman (eds.), *Language. An Invitation to Cognitive Science*, vol. Vol 1, 183–208. The MIT Press. Cambridge, MA.
- Demagny, Annie-Claude. 2013. *Temporalité et espace en langue seconde : contraintes typologiques dans l'acquisition du français par l'adulte anglophone*. Université Paris VIII Vincennes-Saint Denis phdthesis. <https://theses.hal.science/tel-00979047>. (16 October, 2025).
- Dewaele, J.-M. 1998. Lexical Inventions: French Interlanguage as L2 versus L3. *Applied Linguistics*. Oxford University Press (OUP) 19(4). 471–490. <https://doi.org/10.1093/applin/19.4.471>.
- Ellis, Rod. 1994. *The study of second language acquisition* (Oxford Applied Linguistics). Oxford: Oxford University Press.
- Engemann, Helen, Anne-Katharina Harr & Maya Hickmann. 2012. Caused motion events across languages and learner types: A comparison of bilingual first and adult second language acquisition. In Luna Filipović & Katarzyna Jaszczołt (eds.), *Space and time in languages and cultures: linguistic diversity* (Human Cognitive Processing v. 36), 263–287. Amsterdam ; Philadelphia: John Benjamins Pub. Co.
- Fédération Wallonie-Bruxelles, Administration générale de l'Enseignement et de la Recherche scientifiques. 2017. Compétences terminales et savoirs requis à l'issue des humanités générales et technologique: Langues modernes. Direction de la Recherche en Education et du pilotage inter réseaux.
- FESeC. 2018. Programme Langues modernes I, II, III (2e et 3e degrés).
- Filipović, Luna. 2007. *Talking about Motion: A crosslinguistic investigation of lexicalization patterns* (Studies in Language Companion Series). Vol. 91. Amsterdam: John Benjamins Publishing Company. <https://doi.org/10.1075/slcs.91>.
- Filipovic, Luna & Ivana Vidakovic. 2010. Typology in the L2 classroom: Second language acquisition from a typological perspective. In Martin Pütz & Laura Sicola (eds.), *Cognitive processing in second language acquisition: inside the learner's mind* (Converging Evidence in Language and Communication Research (CELCR) v. 13), 269–291. Amsterdam ; Philadelphia: John Benjamins Pub.
- Goldin-Meadow, Susan. 1999. The role of gesture in communication and thinking. *Trends in Cognitive Sciences*. Elsevier 3(11). 419–429. [https://doi.org/10.1016/S1364-6613\(99\)01397-2](https://doi.org/10.1016/S1364-6613(99)01397-2).
- Groot, Annette M. B. de. 2011. *Language and cognition in bilinguals and multilinguals: an introduction*. New York: Psychology Press. <https://doi.org/10.4324/9780203841228>.

- Gullberg, Marianne. 1998. *Gesture as a Communication Strategy in Second Language Discourse: A Study of Learners of French and Swedish*. Lund: Lund University Press Doctoral Thesis (monograph).
- Gullberg, Marianne. 2006. Some reasons for studying gesture and second language acquisition (Hommage à Adam Kendon). *IRAL - International Review of Applied Linguistics in Language Teaching* 44(2). 103–124. <https://doi.org/10.1515/IRAL.2006.004>.
- Gullberg, Marianne. 2009a. Reconstructing verb meaning in a second language: How English speakers of L2 Dutch talk and gesture about placement. *Annual Review of Cognitive Linguistics* 7. 221–244. <https://doi.org/10.1075/arcl.7.09gul>.
- Gullberg, Marianne. 2009b. Gestures and the development of semantic representations in first and second language acquisition. *Acquisition et interaction en langue étrangère* (Aile... Lia 1). 117–139. <https://doi.org/10.4000/aile.4514>.
- Gullberg, Marianne. 2010. Language-specific encoding of placement events in gestures. In Jürgen Bohnemeyer & Eric Pederson (eds.), *Event Representation in Language and Cognition*, 166–188. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511782039.008>.
- Gullberg, Marianne. 2011. 5. Thinking, Speaking and Gesturing about Motion in more than One Language. In Aneta Pavlenko (ed.), *Thinking and Speaking in Two Languages*, 143–169. Multilingual Matters. <https://doi.org/10.21832/9781847693389-007>.
- Gullberg, Marianne, Henriëtte Hendriks & Maya Hickmann. 2008. Learning to talk and gesture about motion in French. *First Language* 28(2). 200–236. <https://doi.org/10.1177/0142723707088074>.
- Gullberg, Marianne & Bhuvana Narasimhan. 2010. What gestures reveal about how semantic distinctions develop in Dutch children's placement verbs. *Cognitive Linguistics* 21(2). <https://doi.org/10.1515/COGL.2010.009>.
- Harr, Anne-Katharina. 2012. *Language-Specific Factors in First Language Acquisition: The Expression of Motion Events in French and German* (Studies on Language Acquisition [SOLA] Ser v. 48). Boston: De Gruyter, Inc.
- Hendriks, Henriëtte & Maya Hickmann. 2011. Expressing Voluntary Motion in a Second Language: English Learners of French. In Bene Bassetti & Vivian Cook (eds.), *Language and bilingual cognition*, 315–339. New York: Psychology Press. <https://doi.org/10.4324/9780203836859>.
- Hendriks, Henriëtte, Maya Hickmann & Annie-Claude Demagny. 2008. How adult English learners of French express caused motion: A comparison with English and French natives. *Acquisition et interaction en langue étrangère* (27). 15–41. <https://doi.org/10.4000/aile.3973>.
- Hendriks, Henriëtte, Maya Hickmann & Carla Pastorino-Campos. 2021. Running or crossing? Children's expression of voluntary motion in English, German, and French. *Journal of Child Language* 49(3). 578–601. <https://doi.org/10.1017/S0305000921000271>.

- Heyvaert, Pauline. 2018. Het gebruik van de Nederlandse plaatsingswerkwoorden 'zetten' en 'leggen' door Franstalige leerders van het Nederlands. *Dutch Journal of Applied Linguistics* 7(1). 45–67. <https://doi.org/10.1075/dujal.17004.hey>.
- Hickmann, Maya & Henriëtte Hendriks. 2010. Typological constraints on the acquisition of spatial language in French and English. *Cognitive Linguistics* 21(2). <https://doi.org/10.1515/COGL.2010.007>.
- Hickmann, Maya, Henriëtte Hendriks & Marianne Gullberg. 2011. Developmental perspectives on the expression of motion in speech and gesture: A comparison of French and English. *Language, Interaction and Acquisition* 2(1). 129–156. <https://doi.org/10.1075/lia.2.1.06hic>.
- Hijazo-Gascón, Alberto. 2021. *Moving across languages: motion events in Spanish as a second language* (Applications of Cognitive Linguistics volume 47). Berlin ; Boston: Walter de Gruyter GmbH/Mouton.
- Hoetjes, Marieke. 2018. Transfer in Gesture: L2 Placement Event Descriptions. *Proceedings of the Annual Meeting of the Cognitive Science Society* 40(0). <https://escholarship.org/uc/item/3qc1s8xn>. (25 October, 2024).
- Hostetter, Autumn B. 2011. When do gestures communicate? A meta-analysis. *Psychological Bulletin* 137(2). 297–315. <https://doi.org/10.1037/a0022128>.
- Humboldt, Wilhelm von. 1999. *On language: on the diversity of human language construction and its influence on the mental development of the human species* (Cambridge Texts in the History of Philosophy). (Ed.) Michael Losonsky. Translated by Peter Heath based on the first volume published in 1836. New York: Cambridge University Press.
- Ibarretxe Antuñano, Iraide. 2004. Motion Events in Basque Narratives. In Sven Strömquist & Ludo Verhoeven (eds.), *Relating events in narrative. 2: Typological and contextual perspectives*. Mahwah, NJ: Erlbaum.
- Ibarretxe-Antuñano, Iraide & Alberto Hijazo-Gascón. 2012. 15. Variation in motion events: Theory and applications. In Luna Filipović & Katarzyna M. Jaszczołt (eds.), *Human Cognitive Processing*, vol. 36, 349–372. Amsterdam: John Benjamins Publishing Company. <https://doi.org/10.1075/hcp.36.19iba>.
- Iverson, Jana M. & Susan Goldin-Meadow. 2005. Gesture paves the way for language development. *Psychological Science* 16(5). 367–371. <https://doi.org/10.1111/j.0956-7976.2005.01542.x>.
- Iwasaki, Noriko & Keiko Yoshioka. 2020. Thinking-for-Speaking to Describe Motion Events English-Japanese bilinguals' L1 English and L2 Japanese Speech and Gesture: English-Japanese bilinguals' L1 English and L2 Japanese Speech and Gesture. In *European Approaches to Japanese Language and Linguistics*, Chapter_3761. Venice: Fondazione Università Ca' Foscari. <https://doi.org/10.30687/978-88-6969-428-8/004>.
- Jarvis, Scott & Aneta Pavlenko. 2008. *Crosslinguistic influence in language and cognition*. Paperback edition. London New York]: Routledge.
- Jessner, Ulrike. 2003. The nature of cross-linguistic interaction in the multilingual system. In Jasone Cenoz, Britta Hufeisen & Ulrike Jessner-Schmid (eds.), *The*

- multilingual lexicon*, 45–55. New York Boston Dordrecht London Moscow: Kluwer Academic Publishers.
- Jessner, Ulrike. 2023. Third Language Acquisition from a Complexity Dynamic Systems Theory Approach. In Jennifer Cabrelli, Adel Chaouch-Orozco, Jorge González Alonso, Sergio Miguel Pereira Soares, Eloi Puig-Mayenco & Jason Rothman (eds.), *The Cambridge Handbook of Third Language Acquisition*, 64–95. 1st edn. Cambridge University Press. <https://doi.org/10.1017/9781108957823.004>.
- Jessner, Ulrike, Manon Megens & Stefanie Graus. 2016. Crosslinguistic Influence in Third Language Acquisition. In Rosa Alonso Alonso (ed.), *Crosslinguistic influence in second language acquisition* (Second Language Acquisition 95), 193–214. Bristol ; Buffalo: Multilingual Matters.
- Kellerman, Eric. 1977. Towards a characterisation of the strategy of transfer in second language learning. *Interlanguage Studies Bulletin*. Sage Publications, Ltd. 2(1). 58–145.
- Kellerman, Eric. 1995. Crosslinguistic Influence: Transfer to Nowhere? *Annual Review of Applied Linguistics* 15. 125–150. <https://doi.org/10.1017/S0267190500002658>.
- Kellerman, Eric. 2001. New Uses for Old Language: Cross-linguistic and Cross-gestural Influence in the Narratives of Non-Native Speakers. In Jasone Cenoz, Britta Hufeisen & Ulrike Jessner-Schmid (eds.), *Cross-Linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives* (Bilingual Education & Bilingualism), 170–191. Blue Ridge Summit, PA: Multilingual Matters. <https://doi.org/10.21832/9781853595509>.
- Kellerman, Eric & Anne-Marie van Hoof. 2003. Manual accents. *IRAL - International Review of Applied Linguistics in Language Teaching* 41(3). 251–269. <https://doi.org/10.1515/iral.2003.011>.
- Kendon, Adam. 1972. Some Relationships Between Body Motion and Speech. In *Studies in Dyadic Communication*, 177–210. Elsevier. <https://doi.org/10.1016/B978-0-08-015867-9.50013-7>.
- Kendon, Adam. 1980. Gesture and speech: Two aspects of the process of utterance. In Mary R. Key (ed.), *Nonverbal communication and language*, 207–227. The Hague: Mouton.
- Kendon, Adam. 1988. How gestures can become like words. In *Cross-cultural perspectives in nonverbal communication*, 131–141. Ashland, OH, US: Hogrefe & Huber Publishers.
- Kendon, Adam. 1994. Do Gestures Communicate?: A Review. *Research on Language and Social Interaction* 27(3). 175–200.
- Kendon, Adam. 2004. *Gesture: visible action as utterance*. Cambridge ; New York: Cambridge University Press.
- Kendon, Adam. 2017. Pragmatic functions of gestures: Some observations on the history of their study and their nature. *Gesture* 16(2). 157–175. <https://doi.org/10.1075/gest.16.2.01ken>.
- Kita, Sotaro. 2009. Cross-cultural variation of speech-accompanying gesture: A review. *Language and Cognitive Processes* 24(2). 145–167. <https://doi.org/10.1080/01690960802586188>.

- Kita, Sotaro & Asli Özyürek. 2003. What does cross-linguistic variation in semantic coordination of speech and gesture reveal?: Evidence for an interface representation of spatial thinking and speaking. *Journal of Memory and Language* 48(1). 16–32. [https://doi.org/10.1016/S0749-596X\(02\)00505-3](https://doi.org/10.1016/S0749-596X(02)00505-3).
- Kita, Sotaro, Asli Özyürek, Shanley Allen, Amanda Brown, Reyhan Furman & Tomoko Ishizuka. 2007. Relations between syntactic encoding and co-speech gestures: Implications for a model of speech and gesture production. *Language and Cognitive Processes* 22(8). 1212–1236. <https://doi.org/10.1080/01690960701461426>.
- Kita, Sotaro, Ingeborg Van Gijn & Harry Van Der Hulst. 1998. Movement phases in signs and co-speech gestures, and their transcription by human coders. In Ipke Wachsmuth & Martin Fröhlich (eds.), *Gesture and Sign Language in Human-Computer Interaction* (Lecture Notes in Computer Science), vol. 1371, 23–35. Berlin, Heidelberg: Springer Berlin Heidelberg. <https://doi.org/10.1007/BFb0052986>.
- Kopecka, Anetta. 2006. The semantic structure of motion verbs in French: Typological perspectives. In Maya Hickmann & Stéphane Robert (eds.), *Typological Studies in Language*, vol. 66, 83–101. Amsterdam: John Benjamins Publishing Company. <https://doi.org/10.1075/tsl.66.06kop>.
- Krason, Anna, Rebecca Fenton, Rosemary Varley & Gabriella Vigliocco. 2022. The role of iconic gestures and mouth movements in face-to-face communication. *Psychonomic Bulletin & Review* 29(2). 600–612. <https://doi.org/10.3758/s13423-021-02009-5>.
- Lado, Robert. 1957. *Linguistics across Culture: Applied linguistics for Language Teachers*. The University of Michigan Press.
- Larrañaga, Pilar, Jeanine Treffers-Daller, Françoise Tidball & Mari-carmen Gil Ortega. 2012. L1 transfer in the acquisition of manner and path in Spanish by native speakers of English. *International Journal of Bilingualism* 16(1). 117–138. <https://doi.org/10.1177/1367006911405577>.
- Laws, Jacqueline, Anthony Attwood & Jeanine Treffers-Daller. 2022. Unlearning the boundary-crossing constraint: processing instruction and the acquisition of motion event construal. *International Review of Applied Linguistics in Language Teaching* 60(4). 1089–1118. <https://doi.org/10.1515/iral-2020-0147>.
- Lemmens, Maarten. 2002. Over de gemotiveerde alomtegenwoordigheid van liggen, zitten en staan: linguïstische en didactische perspectieven. In Philippe Hilgsmann (ed.), *Le néerlandais en France et en Belgique francophone: approches scientifiques et didactiques = Het Nederlands in Frankrijk en in Franstalig België: wetenschappelijk en didactisch benaderd*, 91–114. Villeneuve-d'Ascq: Université Charles de Gaulle-Lille 3.
- Lemmens, Maarten. 2005. Motion and location: toward a cognitive typology. *Travaux (CIREC)* 122(Parcours linguistiques. Domaine anglais). 223–242.
- Lemmens, Maarten. 2006. Caused posture: Experiential patterns emerging from corpus research. In Stefan Th. Gries & Anatol Stefanowitsch (eds.), *Trends in Linguistics. Studies and Monographs [TiLSM]*. Berlin, New York: Mouton de Gruyter. <https://doi.org/10.1515/9783110197709.261>.

- Lemmens, Maarten. 2021. *Usage-based Perspectives on Lexical and Constructional Semantics*. Shanghai, China: Shanghai Foreign Language Education Press. <https://shs.hal.science/halshs-04292240>. (24 October, 2024).
- Lemmens, Maarten & Julien Perrez. 2010. On the use of posture verbs by French-speaking learners of Dutch: A corpus-based study. *Cognitive Linguistics* 21(2). 315–347. <https://doi.org/10.1515/COGL.2010.012>.
- Lemmens, Maarten & Julien Perrez. 2012. A quantitative analysis of the use of posture verbs by French-speaking learners of Dutch. *CogniTextes. Revue de l'Association française de linguistique cognitive*. Association française de linguistique cognitive (AFLiCo) (Volume 8). <https://doi.org/10.4000/cognitextes.609>.
- Lemmens, Maarten & Julien Perrez. 2018. French onions and Dutch trains: Typological perspectives on learners' descriptions of spatial scenes. In Andrea Tyler, Lihong Huang & Hana Jan (eds.), *What is Applied Cognitive Linguistics?*, 121–150. Berlin, Boston: De Gruyter. <https://doi.org/10.1515/9783110572186-005>.
- Lemmens, Maarten & Dan Isaac Slobin. 2008. Positie- en bewegingswerkwoorden in het Nederlands, het Engels en het Frans. *Verslagen en Mededelingen van de Koninklijke Academie voor Nederlandse Taal- en Letterkunde* 118(1). 17–32.
- Lewandowski, Wojciech. 2021. Variable motion event encoding within languages and language types: a usage-based perspective. *Language and Cognition* 13(1). 34–65. <https://doi.org/10.1017/langcog.2020.25>.
- Lopez-Ozieblo, Renia. 2022. Observations on the Progression of Gestures with L2 Proficiency: A Call for Further Research. *Journal of Psycholinguistic Research*. <https://doi.org/10.1007/s10936-022-09862-y>.
- Lucy, John A. 1992. *Language Diversity and Thought: A Reformulation of the Linguistic Relativity Hypothesis*. 1st edn. Cambridge University Press. <https://doi.org/10.1017/CBO9780511620843>.
- Mamus, Ezgi, Laura J. Speed, Gerardo Ortega, Asifa Majid & Aslı Özyürek. 2025. Gestural and Verbal Evidence of Conceptual Representation Differences in Blind and Sighted Individuals. *Cognitive Science* 49(10). e70125. <https://doi.org/10.1111/cogs.70125>.
- Max Planck Institute for Psycholinguistics: The Language Archive. 2024. ELAN. Nijmegen. <https://archive.mpi.nl/tla/elan>.
- Mayer, Mercer. 1969. *Frog, where are you?* New York: Dial Books for Young Readers.
- Mayer, Mercer. 1979. *Frog goes to dinner*. New York: Dial Books for Young Readers.
- McCafferty, Steven G. & Gale Stam (eds.). 2008. *Gesture: second language acquisition and classroom research* (ESL & Applied Linguistics Professional Series). New York: Routledge.
- McNeill, David. 1985. So You Think Gestures Are Nonverbal? *Psychologica Review* 92(3). 350–371.
- McNeill, David. 1992. *Hand and Mind: What Gestures Reveal about Thought*. Chicago, London: University of Chicago Press.

- McNeill, David. 2001. Analogic/Analytic representations and cross-linguistic differences in thinking for speaking. *cogl* 11(1-2). 43-60. <https://doi.org/10.1515/cogl.2001.010>.
- McNeill, David. 2005. *Gesture and thought*. Chicago: University of Chicago Press.
- McNeill, David. 2006. Gesture and Communication. In Keith Brown (ed.), *Encyclopedia of Language & Linguistics*, 58-66. Amsterdam Boston Heidelberg: Elsevier. <https://doi.org/10.1016/B0-08-044854-2/00798-7>.
- McNeill, David. 2016. *Why We Gesture: The Surprising Role of Hand Movements in Communication*. Cambridge, UK ; New York: Cambridge University Press.
- McNeill, David & Susan D. Duncan. 2000. Growth points in thinking-for-speaking. In David McNeill (ed.), *Language and Gesture*, 141-161. 1st edn. Cambridge University Press. <https://doi.org/10.1017/CBO9780511620850.010>.
- Mol, Lisette & Sotaro Kita. 2012. Gesture structure affects syntactic structure in speech. *Proceedings of the Annual Meeting of the Cognitive Science Society* 34(34). <https://escholarship.org/uc/item/3sd7917s>. (3 October, 2024).
- Müller, Cornelia. 2014. Gestural modes of representation as techniques of depiction. In Cornelia Müller, Alan J. Cienki, Ellen Fricke, Silva H. Ladewig, David McNeill & Sedinha Tessendorf (eds.), *Body - Language - Communication: an international handbook on multimodality in human interaction* (Handbooks of Linguistics and Communication Science 38.2). Berlin ; Boston: De Gruyter Mouton.
- Negueruela, Eduardo, James P. Lantolf, Stefanie Rehn Jordan & Jaime Gelabert. 2004. The "private function" of gesture in second language speaking activity: a study of motion verbs and gesturing in English and Spanish. *International Journal of Applied Linguistics* 14(1). 113-147. <https://doi.org/10.1111/j.1473-4192.2004.00056.x>.
- Odlin, Terence. 1989. *Language Transfer: Cross-Linguistic Influence in Language Learning*. 1st edn. Cambridge University Press. <https://doi.org/10.1017/CBO9781139524537>.
- Özçakalistan, Seyda & Dan Isaac Slobin. 1999. Learning How to Search for the Frog: Expression of Manner of Motion in English, Spanish, and Turkish. In Annabel Greenhill, Heather Littlefield & Cheryl Tano (eds.), *Proceedings of the 23rd Annual Boston University Conference on Language Development*, vol. 2, 541-552. Somerville, Mass: Cascadilla Press.
- Özçalışkan, Şeyda. 2015. Ways of crossing a spatial boundary in typologically distinct languages. *Applied Psycholinguistics* 36(2). 485-508. <https://doi.org/10.1017/S0142716413000325>.
- Özyürek, Asli, Sotaro Kita, Shanley Allen, Amanda Brown, Reyhan Furman & Tomoko Ishizuka. 2008. Development of cross-linguistic variation in speech and gesture: Motion events in English and Turkish. *Developmental Psychology* 44(4). 1040-1054. <https://doi.org/10.1037/0012-1649.44.4.1040>.
- Özyürek, Asli, Sotaro Kita, Shanley E.M. Allen, Reyhan Furman & Amanda Brown. 2005. How does linguistic framing of events influence co-speech gestures?: Insights from crosslinguistic variations and similarities. *Gesture* 5(1-2). 219-240. <https://doi.org/10.1075/gest.5.1.15ozy>.

- Parrill, Fey. 2010. Viewpoint in speech–gesture integration: Linguistic structure, discourse structure, and event structure. *Language and Cognitive Processes* 25(5). 650–668. <https://doi.org/10.1080/01690960903424248>.
- Parrill, Fey. 2011. The relation between the encoding of motion event information and viewpoint in English-accompanying gestures. *Gesture* 11(1). 61–80. <https://doi.org/10.1075/gest.11.1.04par>.
- Pavlenko, Aneta. 2000. L2 Influence on L1 in Late Bilingualism. *Issues in Applied Linguistics* 11(2). <https://doi.org/10.5070/L4112005033>.
- Pavlenko, Aneta. 2005. Bilingualism and Thought. In Judith F. Kroll & A. M. B. de Groot (eds.), *Handbook of bilingualism: psycholinguistic approaches*, 433–453. Oxford ; New York: Oxford University Press.
- Pavlenko, Aneta. 2011. 7. (Re-)naming the World: Word-to-Referent Mapping in Second Language Speakers. In Aneta Pavlenko (ed.), *Thinking and Speaking in Two Languages*, 198–236. Multilingual Matters. <https://doi.org/10.21832/9781847693389-009>.
- Peiró Márquez, Laura & Iraide Ibarretxe-Antuñano. 2021. ¿Cómo incide la gestualidad en la codificación del movimiento? *e-AESLA* 7. 19–36.
- Pika, Simone, Elena Nicoladis & Paula F. Marentette. 2006. A cross-cultural study on the use of gestures: Evidence for cross-linguistic transfer? *Bilingualism: Language and Cognition* 9(3). 319–327. <https://doi.org/10.1017/S1366728906002665>.
- Pourcel, Stéphanie & Anetta Kopecka. 2005. Motion Events in French: Typological Diversity. *Durham & Newcastle working papers in linguistics* 11. 139–153.
- Région Wallonne. 2012. Wallangues.
- Schegloff, Emanuel A. 1984. On some gestures' relation to talk. In John Maxwell Atkinson & John Heritage (eds.), *Structures of Social Action: Studies in Conversation Analysis*, 266–295. Cambridge University Press.
- Selinker, Larry. 1972. Interlanguage. *International Review of Applied Linguistics in Language Teaching* 10(3). 209–231.
- Sharwood Smith, Michael & Eric Kellerman. 1986. Crosslinguistic influence in second language acquisition: an introduction. In Eric Kellerman & Michael Sharwood Smith (eds.), *Crosslinguistic influence in second language acquisition* (Language Teaching Methodology Series), 1–9. 1st ed. New York: Pergamon Institute of English.
- Simons, Germain. 2018. Les genres textuels en langues étrangères : entre théorie et pratique. In Marianne Jacquin (ed.), *Pistes méthodologiques pour intégrer la dimension générique dans l'enseignement des langues étrangères* (Exploration. Recherches en sciences de l'éducation), 213–243. Peter Lang, Berne, Switzerland. <https://orbi.uliege.be/handle/2268/224312>. (23 October, 2025).
- Slobin, Dan I. 2006. What makes manner of motion salient?: Explorations in linguistic typology, discourse, and cognition. In Maya Hickmann & Stéphane Robert (eds.), *Typological Studies in Language*, vol. 66, 59–81. Amsterdam: John Benjamins Publishing Company. <https://doi.org/10.1075/tsl.66.05slo>.

- Slobin, Dan I., Iraide Ibarretxe-Antuñano, Anetta Kopecka & Asifa Majid. 2014. Manners of human gait: a crosslinguistic event-naming study. *Cognitive Linguistics* 25(4). 701–741. <https://doi.org/10.1515/cog-2014-0061>.
- Slobin, Dan Isaac. 1991. Learning to think for speaking: Native language, cognition, and rhetorical style. *Pragmatics* 1(1). 7–26.
- Slobin, Dan Isaac. 1996a. From “thought and language” to “thinking for speaking.” In John J. Gumperz (ed.), *Rethinking linguistic relativity*, 70–96. Cambridge: Cambridge University Press.
- Slobin, Dan Isaac. 1996b. Two ways to travel: Verbs of motion in English and Spanish. In Masayoshi Shibatani & Sandra A. Thompson (eds.), *Grammatical constructions: Their form and meaning*, 195–220. Oxford: Clarendon Press.
- Slobin, Dan Isaac. 1997. The Universal, the Typological, and the Particular in Acquisition. In *The Crosslinguistic Study of Language Acquisition: Expanding the Contexts*, vol. 5, 1–39. Mahwah, NJ/London: Lawrence Erlbaum Associates.
- Slobin, Dan Isaac. 2003. Language and thought online: Cognitive consequences of linguistic relativity. In Dedre Gentner & Susan Goldin-Meadow (eds.), *Language in mind: advances in the study of language and thought*, 157–192. Cambridge, Mass: MIT Press.
- Slobin, Dan Isaac. 2004. The many ways to search for a frog: Linguistic typology and the expression of motion events. In Sven Stromqvist & Ludo Th Verhoeven (eds.), *Relating events in narrative: Typological contextual perspectives*, 219–257. Mahwah, NJ: Lawrence Erlbaum Associates.
- Slobin, Dan Isaac. 2007. Language and thought online: Cognitive consequences of linguistic relativity. In Vyvyan Evans, Benjamin K. Bergen & Jörg Zinken (eds.), *The cognitive linguistics reader*, 902–928. London: Equinox Publishing Ltd.
- Stam, Gale. 2006. Thinking for speaking about motion: L1 and L2 speech and gesture. *IRAL - International Review of Applied Linguistics in Language Teaching* 44(2). 145–171. <https://doi.org/10.1515/IRAL.2006.006>.
- Stam, Gale. 2008. What Gestures Reveal About Second Language Acquisition. In Steven G McCafferty & Gale Stam (eds.), *Gesture second language acquisition and classroom research*, 231–255. New York: Routledge.
- Stam, Gale. 2010. Can an L2 Speaker’s Patterns of Thinking for Speaking Change? In ZhaoHong Han & Teresa Cadierno (eds.), *Linguistic Relativity in SLA: Thinking for Speaking*, 59–83. Bristol: Multilingual Matters. <https://www.degruyter.com/document/doi/10.21832/9781847692788-005/html>. (23 April, 2021).
- Stam, Gale. 2015. Changes in Thinking for Speaking: A Longitudinal Case Study. *The Modern Language Journal*. [National Federation of Modern Language Teachers Associations, Wiley] 99. 83–99.
- Stam, Gale. 2018. Gesture as a window onto conceptualization in second language acquisition: A Vygotskian perspective. In James P. Lantolf, Matthew E. Poehner & Merrill Swain (eds.), *The Routledge Handbook of Sociocultural Theory and Second Language Development*, 165–177. New York & London: Routledge.

- Stam, Gale, Kimberly Urbanski, James Lantolf & Tetyana Smotrova. 2023. How concept-based language instruction works in teaching thinking for speaking in an L2. *International Review of Applied Linguistics in Language Teaching* 61(1). <https://doi.org/10.1515/iral-2022-0073>.
- Stosic, Dejan. 2009. La notion de « manière » dans la sémantique de l'espace: *Langages* n° 175(3). 103–121. <https://doi.org/10.3917/lang.175.0103>.
- Stosic, Dejan, C. Minoccheri & Michel Aurnague. 2023. DinaVmouv (V2): Description, INventaire, Analyse des Verbes de MOUVement. An annotated lexicon of motion verbs in French. http://redac.univ-tlse2.fr/lexicons/dinaVmouv_fr.html.
- Stringer, David. 2012. Spatial Feature Assembly in First and Second Language Acquisition. *Spatial Cognition & Computation* 12(4). 252–274. <https://doi.org/10.1080/13875868.2011.568271>.
- Strömquist, Sven & Ludo Verhoeven (eds.). 2004. *Relating events in narrative. 2: Typological and contextual perspectives*. Mahwah, NJ: Erlbaum.
- Talmy, Leonard. 1985. Lexicalization patterns: Semantic structure in lexical forms. In *Language typology and syntactic description* (Grammatical Categories and the Lexicon), vol. 3, 57–149. Cambridge: Cambridge University Press.
- Talmy, Leonard. 1991. Path to Realization: A Typology of Event Conflation. *Annual Meeting of the Berkeley Linguistics Society* 17(1). 480. <https://doi.org/10.3765/bls.v17i0.1620>.
- Talmy, Leonard. 2000a. *Toward a cognitive semantics* (Language, Speech, and Communication). Vol. 1. Cambridge, Mass: MIT Press.
- Talmy, Leonard. 2000b. *Toward a cognitive semantics* (Language, Speech, and Communication). Vol. 2. Cambridge/ Massachusetts: MIT Press.
- Talmy, Leonard. 2007. Lexical typologies. In Timothy Shopen (ed.), *Language Typology and Syntactic Description*, 66–168. 2nd edn. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CB09780511618437.002>.
- Treffers-Daller, Jeanine. 2012. Thinking for Speaking and linguistic relativity among bilinguals: Towards a new research agenda. *Language, Interaction and Acquisition* 3(2). 288–300. <https://doi.org/10.1075/lia.3.2.06tre>.
- Treffers-Daller, Jeanine & Andreea Calude. 2015. The role of statistical learning in the acquisition of motion event construal in a second language. *International Journal of Bilingual Education and Bilingualism*. Routledge 18(5). 602–623. <https://doi.org/10.1080/13670050.2015.1027146>.
- Treffers-Daller, Jeanine & Françoise Tidball. 2015. Can L2 learners learn new ways to conceptualise events? Evidence from motion event construal among English-speaking learners of French. In Pedro Guijarro-Fuentes, Katrin Schmitz & Natascha Müller (eds.), *The acquisition of French in multilingual contexts* (Second Language Acquisition 94), 145–184. Bristol: Multilingual Matters.
- Tutton, Mark. 2011. How speakers gesture when encoding location with English on and French sur. *Journal of Pragmatics* 43(14). 3431–3454. <https://doi.org/10.1016/j.pragma.2011.07.012>.

- Tütüncü, Irmak Su, Jing Paul, Samantha N. Emerson, Murat Şengül, Melanie Knezevic & Şeyda Özçalışkan. 2023. When Gestures *Do* or *Do Not* Follow Language-Specific Patterns of Motion Expression in Speech: Evidence from Chinese, English and Turkish. *Cognitive Science* 47(4). e13261. <https://doi.org/10.1111/cogs.13261>.
- Urbanski, Kimberly (Buescher) & Gale Stam. 2023. Overview of Multimodality and Gesture in Second Language Acquisition. In *Gesture and Multimodality in Second Language Acquisition*, 1–25. 1st edn. New York: Routledge. <https://doi.org/10.4324/9781003100683-1>.
- Van Staden, Miriam, Melissa Bowerman & Mariet Verhelst. 2006. Some properties of spatial description in Dutch. In Stephen C. Levinson & David P. Wilkins (eds.), *Grammars of Space*, 475–511. 1st edn. Cambridge University Press. <https://doi.org/10.1017/CBO9780511486753.014>.
- Weinreich, Uriel. 1979. *Languages in contact: findings and problems*. 9th (1st edition in 1953). The Hague Paris New York: Mouton.
- Woerfel, Till J. Nesta. 2018. *Encoding motion events: the impact of language-specific patterns and language dominance in bilingual children* (Studies on Language Acquisition volume 58). Berlin ; Boston: De Gruyter.
- Yoshioka, Keiko & Eric Kellerman. 2006. Gestural introduction of Ground reference in L2 narrative discourse. *IRAL - International Review of Applied Linguistics in Language Teaching* 44(2). 251–269. <https://doi.org/10.1515/IRAL.2006.007>.
1950. *Canary Row*. <https://www.youtube.com/watch?v=OwastlZRraA>.
1957. *Tweet Zoo*. <https://www.youtube.com/watch?v=SqhwmHrdf74>. (28 October, 2020).
2001. *Tomato Man movies: Stimulus kit designed to elicit manner, path and causal constructions in motion events with regard to speech and gestures*. Nijmegen, The Netherlands: Max Planck Institute for Psycholinguistics, Language and Cognition group. <https://osf.io/9e45b/>.

Dictionaries

2025. *Édition le Robert: Dico en Ligne Le Robert*.
2025. *Van Dale Groot woordenboek van de Nederlandse taal*. Utrecht: Van Dale Lexicografie b.v

APPENDICES

I. Participants

a. General Data Protection Regulation forms

i.CLIL school



Université de Liège

Formulaire de consentement

[Ver. 4.2 du 5/02/2020 – Étude en linguistique néerlandaise]

Les élèves seront amené·e·s à réaliser deux tâches linguistiques et la réalisation de ces tâches sera filmée. Lors de la première, ils-elles devront raconter ce qu'ils-elles auront vu dans des extraits vidéos en néerlandais. La deuxième consiste en une description d'images en néerlandais. Je leur demanderai également de compléter un petit questionnaire par rapport à leur expérience avec le néerlandais.

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2

4000

Liège

Ce document a pour but de vous fournir toutes les informations nécessaires afin que vous puissiez donner votre accord de participation à celle-ci en toute connaissance de cause.

Pour participer à ce projet de recherche, vous devrez signer le consentement à la fin de ce document et nous vous en remettrons une copie signée et datée. Vous serez totalement libre, après avoir donné votre consentement, de vous retirer de l'étude.

Responsable(s) du projet de recherche

Christina Piot (doctorante)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Christina.piot@uliege.be

Julien Perrez (promoteur)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/17

4000 Liège

Julien.perrez@uliege.be - +32 4 3665837

Description de l'étude

Le projet de doctorat s'étend sur une durée de quatre ans et prévoit trois récoltes de données. La première récolte a lieu en décembre 2020 et les deux suivantes devraient avoir lieu en novembre 2021 et novembre 2022. Le but est que les participants de la récolte de

données en 2020 participent également à l'expérience en 2021 et en 2022 afin que leur évolution puisse être étudiée. L'expérience consiste en deux tâches linguistiques réalisées par paire. Lors de la première, ils devront raconter ce qu'ils auront vu dans des extraits vidéos. La deuxième consiste en une description d'images. La réalisation des deux tâches sera filmée et les visages des participants seront floutés afin qu'ils ne puissent pas être reconnus. Les réponses données par les élèves dans le questionnaire seront traitées de manière anonyme également.

Protection des données à caractère personnel

Le ou les responsables du projet prendront toutes les mesures nécessaires pour protéger la confidentialité et la sécurité de vos données à caractère personnel, conformément au Règlement général sur la protection des données (RGPD – UE 2016/679) et à la loi du 30 juillet 2018 relative à la protection des personnes physiques à l'égard des traitements de données à caractère personnel

8. Qui est le responsable du traitement ?

Le Responsable du Traitement est l'Université de Liège, dont le siège est établi Place du 20-Août, 7, B- 4000 Liège, Belgique.

9. Quelles seront les données collectées ?

1) Questionnaire

- Nom, prénom ;
- Âge ;
- Sexe ;
- Nombre d'années d'apprentissage du néerlandais ;
- Éducation bilingue ou non ;
- Partie de la famille néerlandophone ou non ;
- Fréquence de contacts avec des néerlandophones ;
- Autres expériences avec le néerlandais ;
- Autres langues maîtrisées + niveaux.

2) Expérience

Vidéo des élèves réalisant deux tâches linguistiques et s'exprimant en néerlandais.

10. À quelle(s) fin(s) ces données seront-elles récoltées ?

- Réalisation de la thèse de doctorat,
- Publication d'articles présentant les résultats de l'étude dans des revues spécialisées ou de vulgarisation ;
- Communication des résultats de l'étude lors de congrès et/ou réalisation de toute activité permettant la leur diffusion ;
- Utilisation des résultats dans le cadre d'un enseignement universitaire ;
- Remploi des données collectées dans le but de réaliser des études complémentaires et s'inscrivant dans le même champ de recherche.
- Les résultats de cette étude seront systématiquement rendus anonymes avant toute diffusion.

11. Combien de temps et par qui ces données seront-elles conservées ?

Les données d'identification seront conservées par l'investigatrice durant les phases 1-8 de l'étude (cf. ci-après). À l'issue de cette huitième phase (c.-à-d. en décembre 2022), les données d'identification seront détruites (destruction de la base de données contenant ces données), avec un délai maximum de 5 ans après la fin de l'étude. Cette opération rendra les données de recherche complètement anonymes.

Les données seront hébergées sur le serveur sécurisé DocX de l'Université de Liège.

12. Comment les données seront-elles collectées et protégées durant l'étude ?

- Phase 1 : récolte des données d'identification lors d'un RDV avec l'investigatrice associée à l'étude. Un numéro de code spécifique à l'étude est donné pour chaque participant, qui sera utilisé lors des phases ultérieures.
- Phase 2 : collecte des données de recherche. Dès cette phase, les données d'identification et les données de recherche sont conservées dans deux bases de données distinctes et les informations reliées entre elles au moyen de codes.
- Phase 3 : Analyse des données de recherche et traitement statistique des résultats
- Phase 4 : publication et diffusion des résultats anonymes. Si la diffusion des résultats nécessitait de faire référence à un participant en particulier et à certaines de ses

caractéristiques, les DCP seraient utilisées de façon à garantir sa non reconnaissance (par exemple, utilisation de l'année de naissance sans mention du jour et du mois, masquage du visage...).

- Phase 5 : collecte des données de recherche (novembre 2021). Les données d'identification et les données de recherche sont conservées dans deux bases de données distinctes et les informations reliées entre elles au moyen de codes. Les données seront liées à celles de la première récolte.
- Phase 6 : Analyse des données de recherche et traitement statistique des résultats.
- Phase 7 : publication et diffusion des résultats anonymes. Si la diffusion des résultats nécessitait de faire référence à un participant en particulier et à certaines de ses caractéristiques, les DCP seraient utilisées de façon à garantir sa non reconnaissance (par exemple, utilisation de l'année de naissance sans mention du jour et du mois, masquage du visage...).
- Phase 8 : collecte des données de recherche (novembre 2022). Les données d'identification et les données de recherche sont conservées dans deux bases de données distinctes et les informations reliées entre elles au moyen de codes. Les données seront liées à celles des deux premières récoltes. À l'issue de cette phase, les données d'identification seront détruites (destruction de la base de données contenant ces données), avec un délai maximum de 5 ans après la fin de l'étude. Les données de recherche seront conservées sur un serveur sécurisé du SEGI (certifié ISO 27001) et sur les ordinateurs des chercheurs, de façon chiffrée.
- Phase 9 : Analyse des données et traitement statistique des résultats anonymes
- Phase 10 : publication et diffusion des résultats anonymes. Si la diffusion des résultats nécessitait de faire référence à un participant en particulier et à certaines de ses caractéristiques, les DCP seraient utilisées de façon à garantir sa non reconnaissance (par exemple, utilisation de l'année de naissance sans mention du jour et du mois, masquage du visage...)

13. Ces données seront-elles rendues anonymes ou pseudo-anonymes ?

Pseudonymisation signifie que les données ne seront plus liées à un nom et un prénom mais bien à un code, que seuls l'étudiant et son promoteur peuvent relier à des identités. La table

de correspondance est conservée séparément. Anonymisation signifie que ni l'étudiant, ni son promoteur ni aucun tiers n'est en mesure de réidentifier les personnes concernées, même à l'aide d'autres sources de données. La pseudonymisation ou l'anonymisation doivent intervenir dès que possible (cf. exemple au point 5).

Les données seront pseudonymisées dans un premier temps afin de pouvoir retracer l'évolution de chaque participant en comparant les résultats des trois expériences. Une fois cette association faite (c'est-à-dire en décembre 2022), les données seront complètement anonymisées et les données d'identification seront supprimées.

Les exemples utilisés dans des articles scientifiques ou lors de conférences seront automatiquement anonymisés.

14. Qui pourra consulter et utiliser ces données ?

Accès à l'ensemble des données : Christina Piot.

Accès aux données pseudonymisées : Julien Perrez et Maarten Lemmens (futur co-promoteur, procédures administratives en cours).

15. Ces données seront-elles transférées hors de l'Université ?

Non, ces données ne feront l'objet d'aucun transfert vers ni traitement auprès de tiers. Un accès aux données pseudonymisées (hébergées sur le serveur sécurisé DocX de l'ULiège) sera cependant donné au Professeur Maarten Lemmens (ULille) dès qu'il sera co-promoteur du projet.

16. Sur quelle base légale ces données seront-elles récoltées et traitées ?

La collecte et l'utilisation de vos données à caractère personnel reposent sur votre consentement écrit. En consentant à participer à l'étude, vous acceptez que les données personnelles exposées au point 2 puissent être recueillies et traitées aux fins de recherche exposées au point 3.

17. Quels sont les droits dont dispose la personne dont les données sont utilisées ?

Comme le prévoit le RGPD (Art. 15 à 23), chaque personne concernée par le traitement de données peut, en justifiant de son identité, exercer une série de droits :

- obtenir, sans frais, une copie des données à caractère personnel la concernant faisant l'objet d'un traitement dans le cadre de la présente étude et, le cas échéant, toute information disponible sur leur finalité, leur origine et leur destination;
- obtenir, sans frais, la rectification de toute donnée à caractère personnel inexacte la concernant ainsi que d'obtenir que les données incomplètes soient complétées ;
- obtenir, sous réserve des conditions prévues par la réglementation et sans frais, l'effacement de données à caractère personnel la concernant;
- obtenir, sous réserve des conditions prévues par la réglementation et sans frais, la limitation du traitement de données à caractère personnel la concernant;
- obtenir, sans frais, la portabilité des données à caractère personnel la concernant et qu'elle a fournies à l'Université, c'est - à - dire de recevoir, sans frais, les données dans un format structuré couramment utilisé, à la condition que le traitement soit fondé sur le consentement ou sur un contrat et qu'il soit effectué à l'aide de procédés automatisés ;
- retirer, sans qu'aucune justification ne soit nécessaire, son consentement. Ce retrait entraîne automatiquement la destruction, par le chercheur, des données à caractère personnel collectées ;
- introduire une réclamation auprès de l'Autorité de protection des données (<https://www.autoriteprotectiondonnees.be>, contact@apd-gba.be).

Comment exercer ces droits ?

Pour exercer ces droits, vous pouvez vous adresser au(x) responsable(s) du projet de recherche (christina.piot@uliege.be) ou au Délégué à la protection des données de l'Université, soit par courrier électronique (dpo@uliege.be), soit par lettre datée et signée à l'adresse suivante :

Université de Liège

M. le Délégué à la protection des données,

Bât. B9 Cellule "GDPR",

Quartier Village 3,

Boulevard de Colonster 2,

4000 Liège, Belgique.

Coûts, rémunération et dédommagements

Aucun frais direct lié à votre participation à l'étude ne peut vous être imputé. De même, aucune rémunération ou compensation financière, sous quelle que forme que ce soit, ne vous sera octroyée en échange de votre participation à cette étude.

Retrait du consentement

Si vous souhaitez mettre un terme à votre participation à ce projet de recherche, veuillez en informer Christina Piot (christina.piot@uliege.be). Ce retrait peut se faire à tout moment, sans qu'une justification ne doive être fournie. Sachez néanmoins que les traitements déjà réalisés sur la base de vos données personnelles ne seront pas remis en cause. Par ailleurs, les données déjà collectées ne seront pas effacées si cette suppression rendait impossible ou entravait sérieusement la réalisation du projet de recherche. Vous en seriez alors averti.

Questions sur le projet de recherche

Toutes les questions relatives à cette recherche peuvent être adressées à christina.piot@uliege.be

Je déclare avoir lu et compris les 4 pages de ce présent formulaire et j'en ai reçu un exemplaire signé par les personnes responsables du projet. Je comprends la nature et le motif de ma participation au projet et ai eu l'occasion de poser des questions auxquelles j'ai reçu une réponse satisfaisante. Par la présente, j'accepte librement de participer au projet.

Nom et prénom :

Date :

Signature :

Nom et Prénom du représentant légal :

Date :

Signature :

Nous déclarons être responsables du déroulement du présent projet de recherche. Nous nous engageons à respecter les obligations énoncées dans ce document et également à vous informer de tout élément qui serait susceptible de modifier la nature de votre consentement.

Nom et prénom : Piot Christina

Date :

Signature :

Nom et prénom : Perrez Julien

Date :

Signature :

ii. French-speaking school**Université de Liège****Formulaire de consentement****[Ver. 4.2 du 5/02/2020 – Étude en linguistique néerlandaise]**

Les élèves seront amené·e·s à réaliser deux tâches linguistiques et la réalisation de ces tâches sera filmée. Lors de la première, ils-elles devront raconter ce qu'ils-elles auront vu dans des extraits vidéos en français. La deuxième consiste en une description d'images en français.

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2

4000 Liège

Ce document a pour but de vous fournir toutes les informations nécessaires afin que vous puissiez donner votre accord de participation à celle-ci en toute connaissance de cause.

Pour participer à ce projet de recherche, vous devrez signer le consentement à la fin de ce document et nous vous en remettrons une copie signée et datée. Vous serez totalement libre, après avoir donné votre consentement, de vous retirer de l'étude.

Responsable(s) du projet de recherche

Christina Piot (doctorante)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Christina.piot@uliege.be

Julien Perrez (promoteur)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/17

4000 Liège

Julien.perrez@uliege.be - +32 4 3665837

Description de l'étude

L'expérience consiste en deux tâches linguistiques qui seront réalisées par paire. Lors de la première, les élèves devront raconter ce qu'ils auront vu dans des extraits vidéos. La deuxième consiste en une description d'images. La réalisation des deux tâches sera filmée et les visages des participants seront floutés afin qu'ils ne puissent pas être reconnus.

Protection des données à caractère personnel

Le ou les responsables du projet prendront toutes les mesures nécessaires pour protéger la confidentialité et la sécurité de vos données à caractère personnel, conformément au *Règlement général sur la protection des données* (RGPD – UE 2016/679) et à la loi du 30 juillet 2018 relative à la protection des personnes physiques à l'égard des traitements de données à caractère personnel

1. Qui est le responsable du traitement ?

Le Responsable du Traitement est l'Université de Liège, dont le siège est établi Place du 20-Août, 7, B- 4000 Liège, Belgique.

2. *Quelles seront les données collectées ?*

1) Questionnaire

- Nom, prénom ;
- Âge ;
- Sexe ;
- Autres langues maîtrisées + niveaux.

2) Expérience

Vidéo des élèves réalisant deux tâches linguistiques et s'exprimant en français.

3. *À quelle(s) fin(s) ces données seront-elles récoltées ?*

- Réalisation de la thèse de doctorat,
- Publication d'articles présentant les résultats de l'étude dans des revues spécialisées ou de vulgarisation ;
- Communication des résultats de l'étude lors de congrès et/ou réalisation de toute activité permettant la leur diffusion ;
- Utilisation des résultats dans le cadre d'un enseignement universitaire ;
- Remploi des données collectées dans le but de réaliser des études complémentaires et s'inscrivant dans le même champ de recherche.
- Les résultats de cette étude seront systématiquement rendus anonymes avant toute diffusion.

4. *Combien de temps et par qui ces données seront-elles conservées ?*

Les données d'identification seront conservées par le(s) investigateur(s) durant les phases 1 et 2 de l'étude (cf. ci-après). À l'issue de cette deuxième phase, les données d'identification seront détruites (destruction de la base de données contenant ces données), avec un délai maximum de 5 ans après la fin de l'étude. Cette opération rendra les données de recherche complètement anonymes.

Les données seront hébergées sur le serveur sécurisé DocX de l'Université de Liège.

5. *Comment les données seront-elles collectées et protégées durant l'étude ?*

Phase 1 : récolte des données d'identification lors d'un RDV avec l'investigatrice associée à l'étude. Un numéro de code spécifique à l'étude est donné pour chaque participant, qui sera utilisé lors des phases ultérieures.

Phase 2 : collecte des données de recherche. Dès cette phase, les données communiquées via le questionnaire (sauf nom et prénom) et les données de recherche sont conservées dans deux bases de données distinctes et les informations reliées entre elles au moyen de codes. À l'issue de cette phase, les données d'identification seront détruites (destruction de la base de données contenant ces données), avec un délai maximum de 5 ans après la fin de l'étude. Les données de recherche seront conservées sur un serveur sécurisé du SEGI (certifié ISO 27001) et sur les ordinateurs des chercheurs, de façon chiffrée.

Phase 3 : Analyse des données de recherche et traitement statistique des résultats

Phase 4 : publication et diffusion des résultats anonymes. Si la diffusion des résultats nécessitait de faire référence à un participant en particulier et à certaines de ses caractéristiques, les DCP seraient utilisées de façon à garantir sa non reconnaissance (par exemple, utilisation de l'année de naissance sans mention du jour et du mois, masquage du visage...).

6. *Ces données seront-elles rendues anonymes ou pseudo-anonymes ?*

Pseudonymisation signifie que les données ne seront plus liées à un nom et un prénom mais bien à un code, que seuls l'étudiant et son promoteur peuvent relier à des identités. La table de correspondance est conservée séparément. Anonymisation signifie que ni l'étudiant, ni son promoteur ni aucun tiers n'est en mesure de réidentifier les personnes concernées, même à l'aide d'autres sources de données. La pseudonymisation ou l'anonymisation doivent intervenir dès que possible (cf. exemple au point 5).

Les données seront complètement anonymisées et les données d'identification seront supprimées.

Les exemples utilisés dans des articles scientifiques ou lors de conférences seront automatiquement anonymisés.

7. Qui pourra consulter et utiliser ces données ?

Accès à l'ensemble des données : Christina Piot

Accès aux données pseudonymisées : Julien Perrez et Maarten Lemmens (futur co-promoteur, procédures administratives en cours.)

8. Ces données seront-elles transférées hors de l'Université ?

Non, ces données ne feront l'objet d'aucun transfert vers ni traitement auprès de tiers. Un accès aux données pseudonymisées (hébergées sur le serveur sécurisé DocX de l'ULiège) sera cependant donné au professeur Maarten Lemmens (ULille) dès qu'il sera co-promoteur du projet.

9. Sur quelle base légale ces données seront-elles récoltées et traitées ?

La collecte et l'utilisation de vos données à caractère personnel reposent sur votre consentement écrit. En consentant à participer à l'étude, vous acceptez que les données personnelles exposées au point 2 puissent être recueillies et traitées aux fins de recherche exposées au point 3.

10. Quels sont les droits dont dispose la personne dont les données sont utilisées ?

Comme le prévoit le RGPD (Art. 15 à 23), chaque personne concernée par le traitement de données peut, en justifiant de son identité, exercer une série de droits :

- obtenir, sans frais, une copie des données à caractère personnel la concernant faisant l'objet d'un traitement dans le cadre de la présente étude et, le cas échéant, toute information disponible sur leur finalité, leur origine et leur destination;
- obtenir, sans frais, la rectification de toute donnée à caractère personnel inexacte la concernant ainsi que d'obtenir que les données incomplètes soient complétées ;

- obtenir, sous réserve des conditions prévues par la réglementation et sans frais, l'effacement de données à caractère personnel la concernant;
- obtenir, sous réserve des conditions prévues par la réglementation et sans frais, la limitation du traitement de données à caractère personnel la concernant;
- obtenir, sans frais, la portabilité des données à caractère personnel la concernant et qu'elle a fournies à l'Université, c'est - à - dire de recevoir, sans frais, les données dans un format structuré couramment utilisé, à la condition que le traitement soit fondé sur le consentement ou sur un contrat et qu'il soit effectué à l'aide de procédés automatisés ;
- retirer, sans qu'aucune justification ne soit nécessaire, son consentement. Ce retrait entraîne automatiquement la destruction, par le chercheur, des données à caractère personnel collectées ;
- introduire une réclamation auprès de l'Autorité de protection des données (<https://www.autoriteprotectiondonnees.be>, contact@apd-gba.be).

Comment exercer ces droits ?

Pour exercer ces droits, vous pouvez vous adresser au(x) responsable(s) du projet de recherche (christina.piot@uliege.be) ou au Délégué à la protection des données de l'Université, soit par courrier électronique (dpo@uliege.be), soit par lettre datée et signée à l'adresse suivante :

Université de Liège

M. le Délégué à la protection des données,

Bât. B9 Cellule "GDPR",

Quartier Village 3,

Boulevard de Colonster 2,

4000 Liège, Belgique.

Coûts, rémunération et dédommagements

Aucun frais direct lié à votre participation à l'étude ne peut vous être imputé. De même, aucune rémunération ou compensation financière, sous quelle que forme que ce soit, ne vous sera octroyée en échange de votre participation à cette étude.

Retrait du consentement

Si vous souhaitez mettre un terme à votre participation à ce projet de recherche, veuillez en informer Christina Piot (christina.piot@uliege.be). Ce retrait peut se faire à tout moment, sans qu'une justification ne doive être fournie. Sachez néanmoins que les traitements déjà réalisés sur la base de vos données personnelles ne seront pas remis en cause. Par ailleurs, les données déjà collectées ne seront pas effacées si cette suppression rendait impossible ou entravait sérieusement la réalisation du projet de recherche. Vous en seriez alors averti.

Questions sur le projet de recherche

Toutes les questions relatives à cette recherche peuvent être adressées à christina.piot@uliege.be

Je déclare avoir lu et compris les 4 pages de ce présent formulaire et j'en ai reçu un exemplaire signé par les personnes responsables du projet. Je comprends la nature et le motif de ma participation au projet et ai eu l'occasion de poser des questions auxquelles j'ai reçu une réponse satisfaisante. Par la présente, j'accepte librement de participer au projet.

Nom et prénom :

Date :

Signature :

Nom et Prénom du représentant légal :

Date :

Signature :

Nous déclarons être responsables du déroulement du présent projet de recherche. Nous nous engageons à respecter les obligations énoncées dans ce document et également à vous informer de tout élément qui serait susceptible de modifier la nature de votre consentement.

Nom et prénom : Piot Christina

Nom et prénom : Perrez Julien

Date :

Date :

Signature :

Signature :

iii. Dutch-speaking school**Université de Liège****Toestemmingsformulier****Ver. 1.0 van 25/11/2020 – Onderzoek in de Nederlandse taalkunde**

De leerlingen zullen gevraagd worden om twee taalkundige taken in het Nederlands te vervullen en ze zullen gefilmd worden. De eerst taak bestaat in het navertellen van videofragmenten en de tweede taak is een prentenbeschrijving. Daarnaast zullen ze ook uitgenodigd worden om een kleine vragenlijst in te vullen in verband met hun taalkennis.

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2

4000 Liège

Het doel van dit document is om u te voorzien van alle noodzakelijke informatie zodat u uw geïnformeerde toestemming kunt geven om deel te nemen aan het experiment.

Om deel te nemen aan dit onderzoeksproject dient u aan het einde van dit document de toestemming te ondertekenen en krijgt u van ons een ondertekend en gedateerd exemplaar. Als je eenmaal je toestemming hebt gegeven, ben je volledig vrij om je terug te trekken uit het onderzoek.

De voor het onderzoeksproject verantwoordelijke persoon (personen)

Christina Piot (doctoraatsstudente)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Christina.piot@uliege.be

Julien Perrez (promotor)

Service de Langue néerlandaise moderne et linguistique synchronique

Place Cockerill 3-5

Bat A2, Local 5/17

4000 Liège

Julien.perrez@uliege.be - +32 4 3665837

Beschrijving van de studie

Zoals bovenvermeld zullen de proefpersonen aan twee taken deelnemen. Ze zullen gevraagd worden om videofragmenten na te vertellen en om prenten te beschrijven. De realisatie van de taken zal gefilmd worden en de gezichten van de proefpersonen zullen wazig gemaakt worden zodat ze niet erkend kunnen zijn. De antwoorden gegeven door de proefpersonen op de vragenlijst zullen op een anonieme wijs behandeld worden.

Bescherming van persoonsgegevens

De projectmanager(s) zal (zullen) alle nodige maatregelen nemen om de vertrouwelijkheid en de veiligheid van uw persoonsgegevens te beschermen, in overeenstemming met de *Algemene verordening gegevensbescherming* (AVG - EU 2016/679) en de wet van 30 juli 2018 betreffende de bescherming van natuurlijke personen met betrekking tot de verwerking van persoonsgegevens.

1. *Wie is de verwerkingsverantwoordelijke?*

De verwerkingsverantwoordelijke is de Université de Liège, met zetel te Place du 20-Août, 7, B-4000 Liège, België.

2. *Welke gegevens worden verzameld?*

1) Vragenlijst

- Naam, voornaam;
- Leeftijd
- Geslacht
- Beheersing van vreemde talen + niveaus

2) Experiment

Videobeeld van de proefpersonen terwijl ze de taken vervullen.

3. *Voor welk(e) doel(en) worden deze gegevens verzameld?*

- Realisatie van een doctoraat;
- Publicatie van artikelen die de resultaten van de studie presenteren in gespecialiseerde of gepopulariseerde tijdschriften;
- Mededeling van de resultaten van het onderzoek tijdens congressen en/of het uitvoeren van een activiteit die de verspreiding ervan mogelijk maakt;
- Gebruik van resultaten in het universitair onderwijs;
- Hergebruik van de verzamelde gegevens om aanvullende studies uit te voeren op hetzelfde onderzoeksgebied.

De resultaten van deze studie zullen systematisch worden geanonimiseerd voordat ze worden verspreid.

4. *Hoe lang en door wie worden deze gegevens bewaard?*

De identificatiegegevens worden door de onderzoekster tijdens de fases 1 en 2 van het onderzoek bewaard (zie hieronder). Aan het einde van deze tweede fase zullen de identificatiegegevens worden vernietigd (vernietiging van de databank die deze gegevens

bevat), met een maximale vertraging van 5 jaar na het einde van de studie. Deze operatie maakt de onderzoeksgegevens volledig anoniem.

5. Hoe worden de gegevens tijdens het onderzoek verzameld en beschermd?

- Fase 1: Verzameling van identificatiegegevens tijdens een bijeenkomst met de onderzoekster die bij het onderzoek betrokken is. Voor elke deelnemer wordt een studiespecifiek codenummer gegeven, dat in de volgende fasen zal worden gebruikt.
- Fase 2: Verzameling van onderzoeksgegevens. Vanaf deze fase worden de identificatiegegevens en onderzoeksgegevens in twee afzonderlijke databanken bewaard en wordt de informatie door middel van codes aan elkaar gekoppeld. Aan het einde van deze fase zullen de identificatiegegevens worden vernietigd (vernietiging van de databank die deze gegevens bevat), met een maximale vertraging van 5 jaar na het einde van de studie. De onderzoeksgegevens worden versleuteld opgeslagen op een beveiligde SEGI-server (ISO 27001 gecertificeerd) en op de computer van de onderzoekster.
- Fase 3: Analyse en statistische verwerking van anonieme resultaten.
- Fase 4: Publicatie en verspreiding van anonieme resultaten. Als voor de verspreiding van de resultaten een verwijzing naar een bepaalde deelnemer en een aantal van zijn of haar kenmerken nodig is, worden de FAD's zodanig gebruikt dat ze niet worden erkend (bijvoorbeeld gebruik van het geboortjaar zonder vermelding van de dag en de maand, gezichten wazig gemaakt enz.)

6. Worden deze gegevens anoniem of pseudo-anoniem gemaakt?

In fase 1 zullen de gegevens gepseudonimiseerd worden. Alle gegevens zullen geanonimiseerd worden na fase 2 (zie hierboven).

7. Wie heeft toegang tot deze gegevens en wie kan ze gebruiken?

Ik zal toegang hebben tot alle gegevens en ik zal ze zelf anonimiseren.

Mijn promotor (prof. Julien Perrez) zal toegang hebben tot de geanonimiseerde gegevens na de tweede fase. Eens prof. Maarten Lemmens mijn copromotor is geworden, zal hij daar ook toegang toe krijgen. (De administratieve procedure is aan de gang).

8. *Worden deze gegevens buiten de universiteit overgedragen?*

Nee, deze gegevens worden niet overgedragen aan of verwerkt door derden. Eens professor Maarten Lemmens (ULille) mijn copromotor is geworden, zal hij toegang tot de geanonimiseerde gegevens via de beveiligde databaseserver DocX van de Universiteit van Luik krijgen.

9. *Op welke juridische basis worden deze gegevens verzameld en verwerkt?*

Het verzamelen en verwerken van uw persoonlijke gegevens is gebaseerd op uw schriftelijke toestemming. Door uw toestemming voor deelname aan het onderzoek stemt u ermee in dat de in punt 2 genoemde persoonsgegevens mogen worden verzameld en verwerkt voor de in punt 3 genoemde onderzoeksdoeleinden.

10. *Welke rechten heeft degene wiens gegevens worden gebruikt?*

Zoals bepaald in de AVG (art. 15-23) kan elke betrokkene door het bewijs van zijn of haar identiteit een reeks rechten uitoefenen:

- gratis een kopie te krijgen van de hem/haar betreffende persoonsgegevens die in het kader van dit onderzoek worden verwerkt en, in voorkomend geval, alle beschikbare informatie over het doel, de herkomst en de bestemming ervan;
- gratis de rectificatie van eventuele onjuiste persoonsgegevens die op hem/haar betrekking hebben en de aanvulling van onvolledige gegevens te verkrijgen;
- onder de voorwaarden van het reglement en zonder kosten de verwijdering van de persoonsgegevens die op haar betrekking hebben te verkrijgen;
- onder de voorwaarden van het reglement en zonder kosten, de beperking van de verwerking van de hem betreffende persoonsgegevens te verkrijgen;
- het kosteloze verkrijgen van de overdraagbaarheid van de persoonsgegevens die hij/zij aan de universiteit heeft verstrekt, dat wil zeggen het kosteloze ontvangen van

de gegevens in een gestructureerd, algemeen gebruikt formaat, mits de verwerking gebaseerd is op toestemming of contract en wordt uitgevoerd met behulp van geautomatiseerde procedés;

- zijn of haar toestemming in te trekken, zonder dat daarvoor enige rechtvaardiging nodig is. Intrekking van de toestemming leidt automatisch tot de vernietiging van de door de onderzoekster verzamelde persoonsgegevens;
- een klacht in te dienen bij de gegevensbeschermingsautoriteit (<https://www.gegevensbeschermingsautoriteit.be>, contact@apd-gba.be).

Hoe kunnen deze rechten worden uitgeoefend?

Om deze rechten uit te oefenen kunt u contact opnemen met de persoon (personen) die verantwoordelijk is (zijn) voor het onderzoeksproject (christina.piot@uliege.be) of met de functionaris voor gegevensbescherming van de universiteit, hetzij per e-mail (dpo@uliege.be), hetzij per brief gedateerd en ondertekend op het volgende adres

Université de Liège

Functionaris voor gegevensbescherming,

Bât B9, Cellule "GDPR",

Quartier village 3,

Boulevard de Colonster 2,

4000 Luik, België.

Kosten, beloning en compensatie

Er kunnen geen directe kosten in verband met uw deelname aan de studie aan u worden aangerekend. Ook wordt u op geen enkele wijze gecompenseerd of financieel gecompenseerd voor uw deelname aan dit onderzoek.

Intrekking van de toestemming

Als u uw deelname aan dit onderzoeksproject wilt beëindigen, informeer dan Christina Piot (christina.piot@uliege.be). Intrekking kan te allen tijde zonder rechtvaardiging plaatsvinden. Wij wijzen u er echter op dat de reeds op basis van uw persoonsgegevens uitgevoerde verwerkingen niet in twijfel worden getrokken. Bovendien worden reeds verzamelde gegevens niet gewist als dat de voltooiing van het onderzoeksproject onmogelijk of ernstig belemmerd zou maken. In dergelijke gevallen wordt u op de hoogte gebracht.

Vragen over het onderzoeksproject

Alle vragen met betrekking tot dit onderzoek kunnen worden gericht aan Christina Piot (christina.piot@uliege.be).

Ik verklaar dat ik de 4 pagina's van dit formulier heb gelezen en begrepen en een kopie heb ontvangen die is ondertekend door de personen die verantwoordelijk zijn voor het project. Ik begrijp de aard en het doel van mijn deelname aan het project en heb de gelegenheid gehad om vragen te stellen waarop ik bevredigende antwoorden heb gekregen. Ik ga hierbij vrijelijk akkoord met deelname aan het project.

Naam en achternaam van de deelnemer:

Datum:

Handtekening:

Naam en voornaam van de wettelijke vertegenwoordiger:

Datum:

Handtekening:

Wij verklaren dat wij verantwoordelijk zijn voor de uitvoering van dit onderzoeksproject. Wij verbinden ons ertoe de verplichtingen in dit document na te leven en u op de hoogte te brengen van elk element dat de aard van uw toestemming zou kunnen wijzigen.

Naam en achternaam: Christina Piot

Datum:

Handtekening:

Naam en achternaam: Julien Perrez

Datum:

Handtekening:

b. Letters for principals**i. CLIL school**

Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Chère Madame,

Je m'appelle Christina Piot et je suis doctorante en linguistique néerlandaise à l'Université de Liège. Dans le cadre de mon projet de doctorat, je vais réaliser une expérience longitudinale auprès d'élèves francophones, d'élèves néerlandophones et d'élèves francophones en immersion néerlandais. Par la présente, je vous fais part de mon souhait de réaliser cette expérience avec une classe de 4^{ème} immersion néerlandais de votre établissement.

Il est préférable que les élèves ne sachent pas quel est mon objet d'étude précis afin qu'ils·elles ne soient pas influencé·e·s et donc que les résultats ne soient pas faussés. Je peux cependant vous dire que les élèves seront amené·e·s à réaliser deux tâches linguistiques et que la réalisation de ces tâches sera filmée. Lors de la première, ils·elles devront raconter ce qu'ils·elles auront vu dans des extraits vidéos en néerlandais. La deuxième consiste en une description d'images en néerlandais. Cette expérience devra avoir lieu 3 fois, chaque fois à un an d'intervalle, afin que je puisse étudier l'évolution des élèves.

Comme décrit plus en détails dans le formulaire de consentement, toutes les données seront anonymisées. Les vidéos seront floutées et les élèves ne seront donc pas reconnaissables. J'ai obtenu l'autorisation de procéder à ces enregistrements de l'Université de Liège et j'ai également soumis le projet au Comité d'éthique en sciences humaines et sociales. Je ne peux cependant les effectuer sans votre autorisation formelle. J'attire votre attention sur le fait que les données récoltées pour cette étude ne seront utilisées qu'à des fins scientifiques.

Je prévois bien sûr le matériel nécessaire afin de réaliser l'expérience en toute sécurité. Les élèves réaliseront les tâches par deux et seront séparés par une distance de deux mètres minimum ainsi que par un Plexiglass. Je mettrai du gel hydroalcoolique à leur disposition et les images seront désinfectées systématiquement. Je prendrai également soin d'aérer le local au

maximum. Le port du masque entraverait par contre la récolte de données et compromettrait les objectifs poursuivis par l'expérience. C'est pourquoi l'élève qui sera filmé·e sera invité·e. à le retirer une fois qu'il·elle sera installé·e et à le remettre dès que l'expérience sera terminée. Le deuxième élève et moi porterons notre masque en permanence.

Je vous demande donc l'autorisation de réaliser l'expérience au sein de votre établissement. Dans le cas d'une réponse positive de votre part, je soumettrai le formulaire de consentement aux élèves afin d'obtenir leur autorisation ainsi que celle de leurs parents.

Si vous souhaitez de plus amples informations, vous pouvez me contacter par mail à l'adresse suivante : christina.piot@uliege.be

Je vous invite dès lors à bien vouloir signer le formulaire ci-joint et vous remercie d'avance pour votre collaboration,

Je vous prie d'agréer mes salutations les meilleures,

Christina Piot

Je, soussignée Madame....., Directrice du, autorise Christina Piot, doctorante à l'Université de Liège, à réaliser une expérience linguistique au sein de mon établissement.

Cachet de l'école et signature :

ii. French-speaking school



Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Cher Monsieur,

Je m'appelle Christina Piot et je suis doctorante en linguistique néerlandaise à l'Université de Liège. Dans le cadre de mon projet de doctorat, je vais réaliser une expérience auprès d'élèves francophones, d'élèves néerlandophones et d'élèves francophones en immersion néerlandais.

Il est préférable que les élèves ne sachent pas quel est mon objet d'étude précis afin qu'ils·elles ne soient pas influencé·e·s et donc que les résultats ne soient pas faussés. Je peux cependant vous dire que les élèves seront amené·e·s à réaliser deux tâches linguistiques et que la réalisation de ces tâches sera filmée. Lors de la première, ils·elles devront raconter ce qu'ils·elles auront vu dans des extraits vidéos en français. La deuxième consiste en une description d'images en français.

Comme décrit plus en détails dans le formulaire de consentement, toutes les données seront anonymisées. Les vidéos seront floutées et les élèves ne seront donc pas reconnaissables. J'ai obtenu l'autorisation de procéder à ces enregistrements de l'Université de Liège et j'ai également soumis le projet au Comité d'éthique en sciences humaines et sociales. Je ne peux cependant les effectuer sans votre autorisation formelle. J'attire votre attention sur le fait que les données récoltées pour cette étude ne seront utilisées qu'à des fins scientifiques.

Je prévois bien sûr le matériel nécessaire afin de réaliser l'expérience en toute sécurité. Les élèves réaliseront les tâches par deux et seront séparés par une distance de deux mètres minimum ainsi que par un Plexiglass. Je mettrai du gel hydroalcoolique à leur disposition et les images seront désinfectées systématiquement. Je prendrai également soin d'aérer le local au maximum. Le port du masque entraverait par contre la récolte de données et compromettrait les objectifs poursuivis par l'expérience. C'est pourquoi l'élève qui sera filmé·e sera invité·e à le retirer une fois qu'il·elle sera installé·e et à le remettre dès que l'expérience sera terminée. Le deuxième élève et moi porterons notre masque en permanence.

Par la présente, je vous demande donc l'autorisation de réaliser l'expérience au sein de votre établissement. Dans le cas d'une réponse positive de votre part, je soumettrai le formulaire de consentement aux élèves afin d'obtenir leur autorisation ainsi que celle de leurs parents.

Si vous souhaitez de plus amples informations, vous pouvez me contacter par mail à l'adresse suivante : christina.piot@uliege.be

Je vous invite dès lors à bien vouloir signer le formulaire ci-joint et vous remercie d'avance pour votre collaboration,

Je vous prie d'agréer mes salutations les meilleures,

Christina Piot

Je, soussigné Monsieur, Préfet des études à, autorise Christina Piot, doctorante à l'Université de Liège, à réaliser une expérience linguistique au sein de mon établissement.

Signature :

iii. Dutch-speaking school



Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Geachte mevrouw.....,

Ik ben Christina Piot en ik doe een doctoraat in de Nederlandse taalkunde aan de Universiteit van Luik. In het kader van mijn project, voer ik een experiment uit bij Franstalige leerlingen, Nederlandstalige leerlingen en CLIL-leerlingen.

Het is beter dat de leerlingen mijn precieze studieobject niet weten zodat ze niet beïnvloed worden en zodat ik geen valse resultaten behaal. Ik kan u echter zeggen dat ik aan de leerlingen zal vragen twee taalkundige taken te vervullen en dat de realisatie van deze taken gefilmd zal worden. De eerste taak bestaat in het navertellen van filmpjes en de tweede in een beschrijving van prenten. Zoals het in detail in het toestemmingsformulier staat, zullen alle gegevens geanonimiseerd worden. De video's zullen wazig gemaakt worden en de leerlingen zullen dus niet herkenbaar zijn.

Ik heb de goedkeuring van de Universiteit van Luik gekregen om de opnames te doen en ik heb ook het project ingediend bij de Ethische Commissie Humane Wetenschappen. Ik kan het experiment echter niet uitvoeren zonder uw formele vergunning. Ik vestig uw aandacht op het feit dat de verzamelde gegevens alleen maar voor wetenschappelijke doeleinden zullen gebruikt worden.

Wat de sanitaire maatregelen betreft, zal ik het nodige materiaal voorzien om het experiment op een veilige manier uit te voeren. De leerlingen zullen de taken per twee vervullen en zullen op een afstand van meer dan twee meter van elkaar zitten. Er zal ook een Plexiglas tussen hen

staan. Ik zal hydroalcoholische gel tot hun beschikking hebben en ik zal iedere keer de prenten desinfecteren. Het dragen van het mondmasker zou echter de dataverzameling hinderen en de objectieven van het experiment in opspraak brengen. Daarom zal de leerling die gefilmd wordt, uitgenodigd worden om zijn/haar mondmasker uit te doen eens hij/zij geïnstalleerd is en om het opnieuw te dragen zodra hij/zij klaar is met het experiment, dat wil zeggen na vijftien tot twintig minuten. De tweede leerling en ik zullen het wel altijd dragen en ik zal ook het lokaal ventileren minstens één keer tussen elke groep.

Hierbij vraag ik u de toestemming om mijn experiment in uw atheneum te realiseren. Als u dit goedkeurt, zal ik de toestemmingsformulieren aan de leerlingen bezorgen om hun vergunning en die van hun ouders te krijgen.

Als u meer informatie wenst, kunt u altijd een e-mail sturen naar christina.piot@uliege.be

Ik nodig u even aan om het onderstaande formulier te ondertekenen en ik bedank u alvast voor uw medewerking,

Hoogachtend,

Christina Piot

Ik, ondergetekende mevrouw....., directeur van....., geeft de toestemming aan Christina Piot, doctoraatsstudente aan de Universiteit van Luik, om een taalkundig experiment in mijn atheneum uit te voeren.

Handtekening:

c. Letter for students



Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Cher.e.s élèves,

Je m'appelle Christina Piot et je suis doctorante en linguistique néerlandaise à l'Université de Liège. Dans le cadre de mon projet de doctorat, je vais réaliser une expérience auprès d'élèves francophones, d'élèves néerlandophones et d'élèves francophones en immersion néerlandais. Je vous invite donc à participer en tant qu'élèves francophones.

Il est préférable que vous ne sachiez pas quel est mon objet d'étude précis afin que vous ne soyez pas influencé.e.s et donc que les résultats ne soient pas faussés. Je peux cependant vous dire que l'expérience consiste en la réalisation de deux tâches linguistiques et qu'elle sera filmée. Lors de la première, je vous demanderai de raconter ce que vous aurez vu dans des extraits vidéos issus d'un dessin animé en français. La deuxième consiste en une description d'images pour enfants en français. La première partie dure environ 20 minutes et la seconde, qui n'aura pas lieu le même jour, dure 15 minutes. Cela se passera dans un local de l'école. Comme décrit plus en détails dans le formulaire de consentement, toutes les données seront rendues anonymes. Les vidéos seront floutées et vous ne serez donc pas reconnaissables.

J'ai obtenu l'autorisation de procéder à ces enregistrements de l'Université de Liège et du Comité d'éthique en sciences humaines et sociales. J'ai par ailleurs obtenu l'accord du Préfet des études, monsieur Je ne peux cependant les effectuer sans votre autorisation et celle de vos parents. J'attire votre attention sur le fait que les données récoltées pour cette étude seront traitées anonymement et ne seront utilisées qu'à des fins scientifiques.

Si vous souhaitez de plus amples informations, vous pouvez me contacter par mail à l'adresse suivante : christina.piot@uliege.be ou par téléphone au 0478958499. Si vous le désirez, vous pouvez également contacter mon promoteur par mail julien.perrez@uliege.be ou par téléphone au 043665837.

Je vous invite dès lors à bien vouloir lire et signer le formulaire de consentement ci-joint et vous prie d'agréer mes salutations les meilleures.

En vous remerciant d'avance pour votre collaboration,

Christina Piot

d. Letters for parents**CLIL school**

Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Madame, Monsieur,

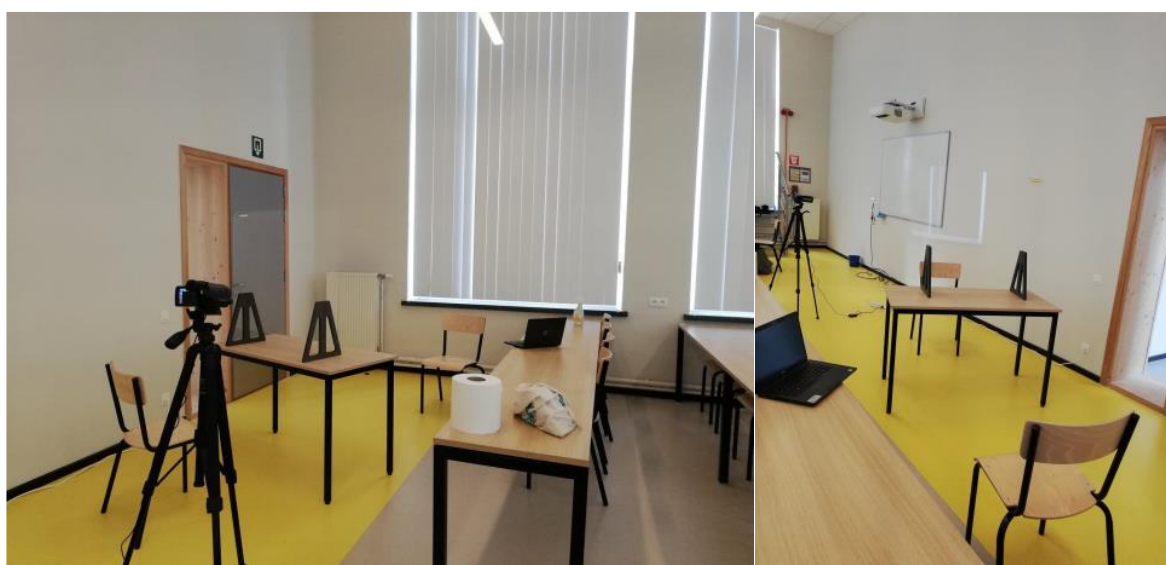
Je m'appelle Christina Piot et je suis doctorante en linguistique néerlandaise à l'Université de Liège. Dans le cadre de mon projet de doctorat, je vais réaliser une expérience auprès d'élèves francophones, d'élèves néerlandophones et d'élèves francophones en immersion néerlandais.

Il est préférable que les élèves ne sachent pas quel est mon objet d'étude précis afin qu'ils·elles ne soient pas influencé·e·s et donc que les résultats ne soient pas faussés. Je peux cependant vous dire que les élèves seront amené·e·s à réaliser deux tâches linguistiques et que la réalisation de ces tâches sera filmée. Lors de la première, ils·elles devront raconter en néerlandais ce qu'ils·elles auront vu dans des extraits vidéos. La deuxième consiste en une description d'images en néerlandais. Comme décrit plus en détails dans le formulaire de consentement, toutes les données seront anonymisées et aucune information concernant l'identité des élèves ne sera divulguée. Les vidéos seront floutées et les élèves ne seront donc pas reconnaissables.

J'ai obtenu l'autorisation de procéder à ces enregistrements de l'Université de Liège et j'ai également soumis le projet au Comité d'éthique en sciences humaines et sociales afin de m'assurer que le dispositif répond bien aux normes de la protection des données. J'ai par ailleurs obtenu l'accord de directrice, madame Vohs. Je ne peux cependant les effectuer sans votre autorisation formelle... J'attire votre attention sur le fait que les données récoltées pour cette étude seront traitées anonymement et ne seront utilisées qu'à des fins scientifiques.

Par ailleurs, afin de pouvoir observer l'évolution des élèves et interpréter mes résultats au mieux, j'aimerais faire passer à vos enfants un test de niveau. Pour des questions d'objectivité, le test proposé par le site www.wallanguages.be me semble idéal. Cependant, le site permet seulement aux adultes résidant en Wallonie et aux mineurs émancipés suivant une formation en alternance de s'y inscrire. Seriez-vous donc d'accord de créer un compte à votre nom et de communiquer les identifiants à votre enfant afin qu'il·elle puisse le réaliser à l'école? J'ignore pourquoi les mineurs issus de l'enseignement à temps plein ne peuvent pas s'y inscrire mais je vous assure qu'il n'y a aucun contenu inapproprié sur ce site.

En ce qui concerne les mesures sanitaires, je prévois bien sûr le matériel nécessaire afin de réaliser l'expérience en toute sécurité. Les élèves réaliseront les tâches par deux et seront séparés par une distance de deux mètres minimum ainsi que par un Plexiglass. Dans la mesure du possible, votre enfant sera en binôme avec son voisin de banc habituel afin d'éviter de nouveaux contacts. Je mettrai du gel hydroalcoolique à leur disposition et les images seront désinfectées systématiquement. Le port du masque entraverait par contre la récolte de données et compromettrait les objectifs poursuivis par l'expérience. C'est pourquoi l'élève qui sera filmé·e sera invité·e. à le retirer une fois qu'il·elle sera installé·e et à le remettre dès que l'expérience sera terminée, c'est-à-dire après quinze à vingt minutes. Ci-dessous, vous pouvez voir comment le dispositif sera mis en place et donc la distance entre les élèves (qui dépasse largement 1.5m) et le Plexiglass. L'autre élève et moi-même porterons évidemment le masque en permanence et je prendrai soin d'aérer le local au minimum entre chaque groupe.



Si vous souhaitez de plus amples informations, n'hésitez pas à me contacter par mail à l'adresse suivante : christina.piot@uliege.be

Je vous invite dès lors à bien vouloir lire et signer le formulaire de consentement ci-joint et le remettre à Madame pour le 14 janvier au plus tard.

Je vous prie d'agréer mes salutations les meilleures et vous remercie d'avance pour votre collaboration,

Christina Piot

French-speaking school

Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Madame, Monsieur,

Je m'appelle Christina Piot et je suis maintenant doctorante en linguistique néerlandaise à l'Université de Liège. Dans le cadre de mon projet de doctorat, je vais réaliser une expérience auprès d'élèves francophones, d'élèves néerlandophones et d'élèves francophones en immersion néerlandais.

Il est préférable que les élèves ne sachent pas quel est mon objet d'étude précis afin qu'ils·elles ne soient pas influencé·e·s et donc que les résultats ne soient pas faussés. Je peux cependant vous dire que les élèves seront amené·e·s à réaliser deux tâches linguistiques et que la réalisation de ces tâches sera filmée. Lors de la première, ils·elles devront raconter ce qu'ils·elles auront vu dans des extraits vidéos en français. La deuxième consiste en une description d'images en français. Comme décrit plus en détails dans le formulaire de consentement, toutes les données seront anonymisées. Les vidéos seront floutées et les élèves ne seront donc pas reconnaissables.

J'ai obtenu l'autorisation de procéder à ces enregistrements de l'Université de Liège et j'ai également soumis le projet au Comité d'éthique en sciences humaines et sociales. J'ai par ailleurs obtenu l'accord du Préfet des études, monsieur Je ne peux cependant les effectuer sans votre autorisation formelle... J'attire votre attention sur le fait que les données récoltées pour cette étude seront traitées anonymement et ne seront utilisées qu'à des fins scientifiques. En ce qui concerne les mesures sanitaires, je prévois bien sûr le matériel nécessaire afin de réaliser l'expérience en toute sécurité. Les élèves réaliseront les tâches par deux et seront séparés par une distance de deux mètres minimum ainsi que par un Plexiglass. Dans la mesure du possible, votre enfant sera en binôme avec son voisin de banc habituel afin d'éviter de nouveaux contacts. Je mettrai du gel hydroalcoolique à leur disposition et les images seront désinfectées systématiquement. Le port du masque entraverait par contre la récolte de données

et compromettrait les objectifs poursuivis par l'expérience. C'est pourquoi l'élève qui sera filmé·e sera invité·e. à le retirer une fois qu'il·elle sera installé·e et à le remettre dès que l'expérience sera terminée, c'est-à-dire après quinze à vingt minutes. Ci-dessous, vous pouvez voir comment le dispositif sera mis en place et donc la distance entre les élèves (qui dépasse largement 1.5m) et le Plexiglass. L'autre élève et moi-même porterons évidemment le masque en permanence et je prendrai soin d'aérer le local au minimum entre chaque groupe.



Si vous souhaitez de plus amples informations, vous pouvez me contacter par mail à l'adresse suivante : christina.piot@uliege.be

Je vous invite dès lors à bien vouloir lire et signer le formulaire de consentement ci-joint et vous prie d'agréer mes salutations les meilleures.

En vous remerciant d'avance pour votre collaboration,

Christina Piot

Dutch-speaking school

- 2021



Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Beste ouders,

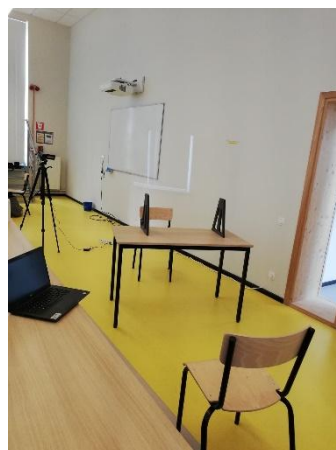
Ik ben Christina Piot en ik ben doctoraatsstudente in de Nederlandse taalkunde aan de Universiteit van Luik. In het kader van mijn doctoraat ben ik een experiment aan het uitvoeren bij Franstalige leerlingen, Nederlandstalige leerlingen en Franstalige leerlingen die in het immersie-onderwijs zitten.

Het is beter dat de leerlingen mijn precieze studieobject niet weten zodat ze niet beïnvloed worden en zodat ik geen valse resultaten behaal. Ik kan u echter zeggen dat ik aan de leerlingen zal vragen twee taalkundige taken te vervullen en dat de realisatie van deze taken gefilmd zal worden. De eerste taak bestaat in het navertellen van filmpjes en de tweede in een beschrijving van prenten. Zoals het in detail in het toestemmingsformulier staat, zullen alle gegevens geanonimiseerd worden. De video's zullen wazig gemaakt worden en de leerlingen zullen dus niet herkenbaar zijn.

Ik heb de goedkeuring van de Universiteit van Luik gekregen om de opnames te doen en ik heb ook het project ingediend bij de Ethische Commissie Humane Wetenschappen. Overigens heb ik de toestemming van de directeur, mevrouw, gekregen. Ik kan het experiment echter niet uitvoeren zonder uw vergunning. Ik vestig uw aandacht op het feit dat de verzamelde gegevens alleen maar voor wetenschappelijke doeleinden zullen gebruikt worden.

Wat de sanitaire maatregelen betreft, zal ik het nodige materiaal voorzien om het experiment op een veilige manier uit te voeren. De leerlingen zullen de taken per twee vervullen en zullen op een afstand van meer dan twee meter van elkaar zitten. Er zal ook een Plexiglas tussen hen

staan. Ik zal hydroalcoholische gel tot hun beschikking hebben en ik zal iedere keer de prenten desinfecteren. Het dragen van het mondmasker zou echter de dataverzameling hinderen en de objectieven van het experiment in opspraak brengen. Daarom zal de leerling die gefilmd wordt, uitgenodigd worden om zijn/jaar mondmasker uit te doen eens hij/zij geïnstalleerd is en om het opnieuw te dragen zodra hij/zij klaar is met het experiment, dat wil zeggen na vijftien tot twintig minuten. De tweede leerling en ik zullen het wel altijd dragen en ik zal ook het lokaal ventileren minstens één keer tussen elke groep. Onderaan kunt u zien hoe de setting eruitziet en dus de afstand tussen de leerlingen (die veel groter dan anderhalve meter is).



Als u meer informatie wenst, kunt u altijd een e-mail sturen naar christina.piot@uliege.be

Ik nodig u even aan om het toestemmingsformulier te ondertekenen en de vragenlijst in te vullen en ik bedank u alvast voor uw medewerking,

Hoogachtend,

Christina Piot

• 2022



Christina Piot

Service de Langue néerlandaise
moderne et linguistique
synchronique

Place Cockerill 3-5

Bat A2, Local 5/18

4000 Liège

Beste ouders,

Ik ben Christina Piot en ik ben doctoraatsstudente in de Nederlandse taalkunde aan de Universiteit van Luik. In het kader van mijn doctoraat ben ik een experiment aan het uitvoeren bij Franstalige leerlingen, Nederlandstalige leerlingen en Franstalige leerlingen die in het immersie-onderwijs zitten.

Het is beter dat de leerlingen mijn precieze studieobject niet weten zodat ze niet beïnvloed worden en zodat ik geen valse resultaten behaal. Ik kan u echter zeggen dat ik aan de leerlingen zal vragen twee taalkundige taken te vervullen en dat de realisatie van deze taken gefilmd zal worden. De eerste taak bestaat in het navertellen van filmpjes en de tweede in een beschrijving van prenten. Zoals het in detail in het toestemmingsformulier staat, zullen alle gegevens geanonimiseerd worden. De video's zullen wazig gemaakt worden en de leerlingen zullen dus niet herkenbaar zijn.

Ik heb de goedkeuring van de Universiteit van Luik en van de Ethische Commissie Humane Wetenschappen gekregen om de opnames te doen. Overigens heb ik de toestemming van de directeur, mevrouw gekregen. Ik kan het experiment echter niet uitvoeren zonder uw vergunning. Ik vestig uw aandacht op het feit dat de verzamelde gegevens alleen maar voor wetenschappelijke doeleinden zullen worden gebruikt.

Als u meer informatie wenst, kunt u altijd een e-mail sturen naar christina.piot@uliege.be

Ik nodig u even aan om het toestemmingsformulier te ondertekenen en de vragenlijst in te vullen en ik bedank u alvast voor uw medewerking,

Hoogachtend,

Christina Piot

e. Questionnaires

CLIL school

• 2021

Fiche signalétique

Nom et prénom :

Sexe : masculin – féminin

Âge :ans.

J'étudie le néerlandais depuis l'âge de.....ans.

Je suis actuellement en 4^{ème} immersion.

J'ai de la famille néerlandophone avec qui je parle en néerlandais : oui – non

J'ai été élevé.e dans les deux langues à la maison : oui - non

Si oui, dans quelles conditions ? Un parent -

En primaire, j'étais

☐ dans l'enseignement traditionnel francophone

☐ dans l'enseignement traditionnel néerlandophone

☐ en immersion néerlandais

☐ Autre:.....

J'ai effectué un programme scolaire en Flandre ou aux Pays-Bas : oui - non

J'ai des contacts réguliers avec des néerlandophones (en face à face) : oui - non

J'ai des contacts réguliers avec des néerlandophones (par écrit) : oui – non

Autre expérience avec le néerlandais ou des L1 :

.....

Résultat obtenu au test Wallangues :.....

(Merci d'également m'envoyer le document PDF par mail à l'adresse suivante :
 christina.piot@uliege.be)

Autres connaissances linguistiques : cochez les cases correspondantes et ajoutez d'autres langues si nécessaire.

	Aucune connaissance	Connaissances de base	Connaissance moyenne	Bonne connaissance	Très bonne connaissance
Anglais					
Allemand					
Espagnol					
Italien					

- 2023

Fiche signalétique

Nom et prénom :

Date de naissance :

J'ai commencé à étudié le néerlandais en(année scolaire) quand j'avais ans.

En primaire, j'étais

☐ dans l'enseignement traditionnel francophone

☐ dans l'enseignement traditionnel néerlandophone

☐ en immersion néerlandais

☐ Autre:.....

Je suis actuellement en 6^{ème} immersion.

J'ai de la famille néerlandophone avec qui je parle en néerlandais : oui – non

J'ai effectué un programme scolaire ou j'ai étudié en Flandre ou aux Pays-Bas : oui – non

Si oui, durée et année(s) :

J'ai des contacts réguliers avec des néerlandophones (en face à face) : oui - non

J'ai des contacts réguliers avec des néerlandophones (par écrit) : oui – non

Autre expérience avec le néerlandais ou des L1·ve·s :

.....

.....

.....

Autres connaissances linguistiques : cochez les cases correspondantes et ajoutez d'autres langues si nécessaire.

	Aucune connaissance	Connaissances de base	Connaissance moyenne	Bonne connaissance	Très bonne connaissance
Anglais					
Allemand					
Espagnol					
Italien					

French-speaking school

Fiche signalétique

Nom et prénom:.....

Sexe : masculin – féminin

Âge :.....ans.

J'étudie le néerlandais depuis l'âge de.....ans.

Je suis actuellement en 4^{ème}.

J'ai de la famille néerlandophone avec qui je parle en néerlandais : oui – non

J'ai été élevé.e dans les deux langues à la maison : oui - non

Si oui, dans quelles conditions ? Un parent -

En primaire, j'étais

☐ dans l'enseignement traditionnel francophone

☐ dans l'enseignement traditionnel néerlandophone

☐ en immersion néerlandais

☐ Autre:.....

J'ai effectué un programme scolaire en Flandre ou aux Pays-Bas : oui - non

J'ai des contacts réguliers avec des néerlandophones (en face à face) : oui - non

J'ai des contacts réguliers avec des néerlandophones (par écrit) : oui – non

Autre expérience avec le néerlandais ou des L1 :

.....

Autres connaissances linguistiques : cochez les cases correspondantes et ajoutez d'autres langues si nécessaire.

	Aucune connaissance	Connaissances de base	Connaissance moyenne	Bonne connaissance	Très bonne connaissance
Anglais					
Allemand					
Espagnol					
Italien					

Dutch-speaking school

Vragenlijst

Naam en voornaam:.....

Geslacht: mannelijk – vrouwelijk

Leeftijd :.....

Ik leer Frans sinds ik.....jaar oud ben.

Ik heb Franstalige familie met wie ik in het Frans spreek: ja - nee

Ik heb een schoolprogramma in Wallonië of Frankrijk gedaan: ja - nee

Ik ben regelmatig in contact met Franstaligen (aangezicht tot aangezicht): ja – nee

Ik heb vaak schriftelijke contacten met Franstaligen: ja - nee

Andere ervaring met het Frans of met Franstalige moedertaalsprekers:

.....

.....

.....

.....

Kennis van de volgende vreemde talen:

	Geen kennis	Basiskennis	Gemiddelde kennis	Goede kennis	Heel goede kennis
Engels					
Frans					
Duits					
Spaans					
Italiaans					
Andere:					

a. Participants' profiles**Legend****Dutch at school**

K: kindergarten

P: primary school

S: secondary school

Self-assessed linguistic skills

0: No knowledge

1: Basic knowledge

2: Average knowledge

3: Good knowledge

4: Very good knowledge

ID	Gender	Age	Primary education	Dutch at school	Dutch-speaking family	School program	Face-to-face interactions	Written interactions	Other experiences with Dutch
FR1	F	15	Traditional	P5-6 + S3	No	No	No	No	
FR2	F	15	Traditional	S3-4	No	No	No	No	
FR3	F	15	Traditional	/	No	No	No	No	
FR4	F	15	Traditional	/	No	No	No	No	
FR5	M	16	Traditional	S3-4	No	No	No	No	
FR6	F	15	Traditional	S3-4	No	No	No	No	
FR7	F	16	Traditional	S3-4	No	No	No	No	Hears grandfather
FR8	F	16	Traditional	S3-4	No	No	No	No	
FR9	F	15	Traditional	/	No	No	No	No	
FR10	F	15	Traditional	S3	No	No	No	No	
FR11	F	15	Traditional	/	No	No	No	No	
FR12	M	15	Traditional	/	No	No	No	No	
FR13	F	15	Traditional	/	No	No	No	No	
FR14	M	15	Traditional	/	No	No	No	No	
FR15	M	15	Traditional	S3	No	No	No	No	

Table I.1 : French-speaking participants' profil

ID	English	German	Spanish	Italian
FR1	3	0	0	1
FR2	2	0	0	0
FR3	3	0	2	0,5
FR4	2	0	3	0
FR5	3	0	0	0
FR6	2	0	0	0
FR7	3	0	0	0
FR8	2	0	0	0
FR9	2	0	1	0
FR10				
FR11	1	0	1	0
FR12	3	0	2	0
FR13	2	0	1	0
FR14	2	0	1	0
FR15	2	0	0	0

Table I.2: French-speaking participants' assessments of their own linguistic skills

ID	Gender	Age	Learning French since the age of	Primary education	French-speaking family	School program	Face-to-face interactions	Written interactions	Other experiences
DU1	F	16	10	Traditional	No	No	No	No	
DU2	F	16	11	Traditional	No	No	No	No	
DU3	F	15	10	Traditional	No	Yes	No	No	
DU4	M	15	10	Traditional	No	No	No	No	
DU5	M	15	11	Traditional	No	No	No	No	Day care
DU6	M	15	10	Traditional	No	No	No	No	
DU7	M	15	10	Traditional	No	No	No	No	
DU8	M	15	11	Traditional	No	No	No	No	
DU9	M	16	11	Traditional	No	No	No	No	
DU10	M	15	9	Traditional	No	Yes	No	No	
DU11	F	14	10	Traditional	No	No	No	No	
DU12	F								
DU13	M	15	6	Traditional	No	No	No	No	
DU14	M	15	11	Traditional	No	No	No	No	

Table I.3: Dutch-speaking participants' profiles

ID	English	French	German	Spanish	Italian
DU1	3	2	0	0	0
DU2	3	1	0	0	0
DU3	3	1	0	0,5	0
DU4	3	1	0	0	0
DU5	3	2	0	0	0
DU6	4	2	0	0	0
DU7	2	1	0	0	0
DU8	2	1	0	0	0
DU9	4	1	0	0	0
DU10	2	3	1	1	0
DU11	3	2	0	1	0
DU12					
DU13	4	0	1	0	0
DU14	3	2	1	0	0

Table I.4: Dutch-speaking participants' assessments of their own linguistic skills

ID	Gender	Primary education	Learning Dutch since	Dutch-speaking family	School program	Regular face-to-face interactions		Regular written interactions		Other experiences
						01/2021	04/2023	01/2021	04/2023	3 language courses
CLIL1	F	Traditional	P1	No	Yes	No	Yes	Yes	Yes	
CLIL2	F	Traditional	S1	Yes	No	No	No	No	No	
CLIL3	F	Immersion	K3	No	No	No	No	No	No	
CLIL5	M	Traditional	P5	No	No	No	No	No	No	
CLIL6	F	Traditional	P6	No	No	No	Yes	No	Yes	Language course
CLIL7	F	Traditional	P5	No	Yes	Yes	More or less	Yes	More or less	
CLIL9	M	Traditional	S1	No	No	No	No	No	No	3 language courses
CLIL10	F	Traditional	P5	No	No	No	No	No	No	
CLIL12	F	Traditional	P5	No	No	No	No	No	No	
CLIL13	F	Traditional	S1	No	No	No	No	No	No	
CLIL14	F	Traditional	P4	No	No	No	No	No	No	
CLIL15	M	Traditional	S1	No	No	No	No	Yes	No	

Table I.5: CLIL participants' profiles

ID	English		German		Spanish		Italian	
	01/2021	04/2023	01/2021	04/2023	01/2021	04/2023	01/2021	04/2023
CLIL1	2	4	0	0	0	1	0	0
CLIL2	2	1	0	0	0	0	0	0
CLIL3	1	1	0	0	0	0	0	0
CLIL5	1	2	0	0	0	0	0	0
CLIL6	1	3	0	0	0	0	0	0
CLIL7	1	1	0	0	0	0	0	2
CLIL9	1	3	0	0	0	1	0	0
CLIL10	3	2	0	0	1	1	0	0
CLIL12	4	4	0	0	0	2	1	1
CLIL13	1	1	0	0	0	0	0	0
CLIL14	1	2	0	0	0	0	0	0
CLIL15	1	2	0	0	0	0	0	0

Table I.6: CLIL participants' assessments of their own linguistic skills

	2021		2023	
	n	%	n	%
A1	2	16.67%	0	0.00%
A2	7	58.33%	5	41.68%
B1	1	8.33%	6	50.00%
B2	2	16.67%	1	8.33%
Total	12	100.00%	12	100.00%

Table 1.7: CLIL participants' proficiency levels in Dutch

b. CLIL participants' questionnaires on the research topic

Voornaam: CLIL1

1. Volgens jou, waar gaat het onderzoek over?

Hoe we Nederlands praten en als ~~het~~ onze
 bureau stijgt met de jaren.

2. Had je hieraan gedacht?

Nee, helemaal niet

Voornaam: CLIL2

1. Volgens jou, waar gaat het onderzoek over?

Om te weten als de Nederlandse lessen efficiënt zijn

2. Had je hieraan gedacht?

Nee. Spreken en geloven over nation events hebben

Voornaam: CLIL3

1. Volgens jou, waar gaat het onderzoek over?

La capacité à nous faire comprendre en NDL
 évolue

2. Had je hieraan gedacht?

Nee

Voornaam CLIL5

1. Volgens jou, waar gaat het onderzoek over?

immensie

2. Had je hieraan gedacht?

Nee

Voornaam: CLIL6

1. Volgens jou, waar gaat het onderzoek over?

2. Had je hieraan gedacht?

Nee

Voornaam: CLIL7

1. Volgens jou, waar gaat het onderzoek over?

Over het niveau van Nederlands in evolutie in een immersie richting

2. Had je hieraan gedacht?

~~Nee~~ Nee echt niet

Voornaam: CLIL9

1. Volgens jou, waar gaat het onderzoek over?

Het niveau van leerlingen in immersie

2. Had je hieraan gedacht?

Dat was ~~best~~ leuk maar dat neemt veel tijd

Voornaam: CLIL10

1. Volgens jou, waar gaat het onderzoek over?

oms niveau Nederlanders

2. Had je hieraan gedacht?

Nee

Voornaam CLIL12

1. Volgens jou, waar gaat het onderzoek over?

is immersie nuttelos?

2. Had je hieraan gedacht?

Nee

Voornaam: CLIL13

1. Volgens jou, waar gaat het onderzoek over?

Comment les écoles en immersion influent-elles ?

2. Had je hieraan gedacht?

Nee

Voornaam: CLIL14

1. Volgens jou, waar gaat het onderzoek over?

Is het immerzie efficiënter dan normaal Nederlandse lessen ?

2. Had je hieraan gedacht?

Nee,

Voornaam: CLIL15

1. Volgens jou, waar gaat het onderzoek over?

Sur notre évolution de la langue

2. Had je hieraan gedacht?

~~Ja~~ Nee

Figure I.1: CLIL participants' questionnaires on the research topic

I. Stimuli

a. Analysis of motion events

F	ME ID	Motion event	Type of motion event	Manner	Path (character viewpoint)	Path (observer viewpoint)	Boundary crossing
F4	ME23	Sylvester crawls out of the bear cage.	Self-propelled	Crawling	Forward	To the right	Yes
F4	ME24	The net is thrown in two pieces outside the bear cage.	Intentionally caused	Throwing	Forward	To the right	Yes
F4	ME25	Sylvester shifts back to avoid the net.	Self-propelled	Walking	Backward	To the right	No
F4	ME26	Sylvester is pacing up and down in front of the bars of the bear cage.	Self-propelled	Pacing	Forward + turning around + forward + turning around + forward	To the right, to the left x3	No

F4	ME28	He walks away.	Self-propelled	Walking	Forward on its right	Turning to the right and forward	No
F5	ME29	Sylvester hid in a cart. He is in it.	Location	Sitting	NA	NA	NA
F5	ME30	In this cart there are pieces of meat for the tigers.	Location	Sitting	NA	NA	NA
F5	ME31	Tweety runs away.	Self-propelled	Running	Forward	To the right	No
F5	ME32	A zoo worker arrives.	Self-propelled	Walking	Forward	To the left	No
F5	ME33	He rides the cart.	Intentionally caused	Riding	Forward	To the left	No
F5	ME34	He goes to the tiger cage	Self-propelled	Riding	Forward	To the left	No
F5	ME36	He throws pieces of meat at the tigers	Intentionally caused	Throwing	Up and backward	Up and to the left	Yes
F5	ME37	He throws Sylvester to the tigers.	Intentionally caused	Throwing	Up and backward	Up and to the left	Yes
F9	ME64	Tweety runs on a wall.	Self-propelled	Running	Forward	Forward	No
F9	ME65	Sylvester runs after Tweety on a wall.	Self-propelled	Running	Forward	Forward + to the left	No
F9	ME66	At the end of the wall, Tweety starts flying.	Self-propelled	Flying	Forward	To the left	No

F9	ME67	Sylvester jumps in the air.	Self-propelled	Springing	Forward	To the left	No
F9	ME68	Sylvester falls on the ground.	Unintentionally caused	Falling	Down	Down	No
F9	ME69	Sylvester runs after Tweety.	Self-propelled	Running	Forward	To the left	No
F9	ME70	Sylvester jumps up and down	Self-propelled	Jumping	Up and forward	Up and to the left	No
F9	ME71	Tweety flies over the pond.	Self-propelled	Flying	Up and forward	Up and to the left	Yes
F9	ME72	Sylvester jumps on the water.	Self-propelled	Springing	Up and forward	Up and to the left	Yes
F9	ME73	Sylvester almost falls into the water.	Unintentionally caused	Falling	Down	Down	Yes
F9	ME74	Sylvester runs back.	Self-propelled	Running	Forward	To the right	No
F9	ME75	Sylvester runs to the land.	Self-propelled	Running	Forward	To the right	Yes
F10	ME76	Tweety stands on a branch.	Location	Standing	NA	NA	NA
F10	ME77	Sylvester pace up and down in front of the lion cage.	Self-propelled	Pacing	Forward + turning around + forward turning	To the right + to the left + to the right	No

					around + forward		
F10	ME79	Sylvester drags a boat with him.	Intentionally caused	Dragging	Forward	To the left	No
F11	ME80	There are crocodiles in the pond.	Location	Sitting	NA	NA	NA
F11	ME81	Sylvester is on a small boat.	Location	Sitting	NA	NA	NA
F11	ME82	Sylvester is rowing.	Self-propelled	Rowing	Forward	To the left	No
F11	ME83	The lion is also on the boat.	Location	Sitting	NA	NA	NA
F11	ME84	Sylvester jumps up.	Self-propelled	Springing	Up	Up	No
F11	ME83b	The lion is at the back of the boat.	Location	Sitting	NA	NA	NA
F11	ME85	Sylvester runs away.	Self-propelled	Running	Forward	To the right	No
F11	ME86	Due to the lack of counterweight, the lion sinks with the boat.	Unintentionally caused	Sinking	Down	Down	Yes
F12	ME87	The lion tries to come out of the water.	Self-propelled	Walking	Up	Up	Yes
F12	ME88	The lion runs to the cage.	Self-propelled	Running	Forward	To the right	Yes (land)
F12	ME89	He enters the cage.	Self-propelled	Running	Forward	To the right	Yes
F12	ME90	He walks towards Sylvester.	Self-propelled	Walking			No
F12	ME91	Sylvester jumps up.	Self-propelled	Springing	Up	Up	No
F12	ME92	Sylvester tries to run away and hide.	Self-propelled	Running	Forward	To the right	Yes

F12	ME93	The lion steps toward Sylvester's hiding place.	Self-propelled	Stepping	Forward	To the right	No
F13	ME94	The lion takes Sylvester out of his hiding place	Intentionally caused	Taking	Out	To the left	Yes
F13	ME95	The lion drags Sylvester to the pond.	Intentionally caused	Dragging	Forward	To the left	Yes
F13	ME96	The lion lifts up the cat. He keeps holding it by the tail and grabs it with his other paw.	Intentionally caused	Lifting	Up and forward	Up and to the left	No
F13	ME97	The lion plunges the cat into the water.	Intentionally caused	Plunging	Down	Down	Yes
F13	ME98	The lion pulls the cat out of the water.	Intentionally caused	Pulling	Up	Up	Yes
F13	ME99	The lion lifts the cat up.	Intentionally caused	Lifting	Up	Up	No
F13	ME100	The lion kicks Sylvester.	Intentionally caused	Kicking	Forward	To the right	No
F13	ME101	Sylvester falls on the ground further away.	Unintentionally caused	Falling	Down	Down	No
F13	ME102	Sylvester slides.	Unintentionally caused	Sliding	Backward	To the right	No

F13	ME103	Sylvester falls into a hole.	Unintentionally caused	Falling	Down	Down	Yes
F14	ME104	Sylvester is going to pole-vault over the pond.	Self-propelled	Pole-vaulting	NA	NA	No
F14	ME105	He first runs in the opposite direction.	Self-propelled	Running	Backward	To the right	No
F14	ME106	He takes a run-up.	Self-propelled	Running	Forward	To the left	No
F14	ME107	Tweety is on a tree, eating a banana.	Location	Sitting	NA	NA	NA
F14	ME108	He throws the banana peel on the ground.	Intentionally caused	Throwing	Down and to the left	Down and to the right	No
F14	ME109	Sylvester places his pole on the banana peel.	Caused location	Putting	Down and forward	Down and to the left	No
F14	ME110	Sylvester slides to the pond and into the pond.	Unintentionally caused	Sliding	Forward + down and forward	To the left + down and to the left	Yes

Table I.1: Analysis of motion events

II. Task & Transcripts

The images used for the matching games in both 2021 and 2023, and the speech transcripts of the experiment are accessible here (password: ExtraAppendices):

[Appendices](#)



III. List of verbs

a. L1 & L2 Dutch

	DU2a	DU2c	DU	Total
*Cause³³	5	2		7
*attraper	1	1		2
*nemen	1			1
*poseren	1			1
*put	1			1
*slagen		1		1
*mettre	1			1
*Manner	11	11		22
*fly	1			1
*jump	3	3		6
*jumpen	1			1
*pagayer		1		1
*ramer		2		2
*ran	2			2
*springen		1		1
*stand	1			1
*vliegen	1	2		3
*vluggen	2	2		4
*MannerCause	14	10		24
*glezen		1		1
*glijzen	1			1
*glisser	3	3		6
*glisseren	1	1		2
*jeter	4	1		5
*lancer	3			3
*liggen	1			1
*shoteren	1			1
*trainer		1		1
*trakten		1		1
*trowen		2		2
*MannerPath	2	4		6
*de honderd pas doen		1		1
*de honderd voeten doen		1		1
*een saut à la perche te maken		1		1
*s'échapper	1			1
*vluchten		1		1
saut à la perche doen	1			1

³³ Cause verbs are understood here as verbs that involve an external entity acting upon a figure. They are rather neutral in the sense that they do not denote any manner nor path.

	DU2a	DU2c	DU	Total
*MannerPathCause	1	3		4
*couler	1			1
*tirer		3		3
*Neutral	5	6		11
*attendre	1			1
*hoeoeoe		1		1
*ploeploeploe		1		1
*ploeploeploeploe		1		1
*ploeploeploeploeploe	1	1		2
*se cacher	1			1
*tut		1		1
*woeoeoeoe		1		1
*caché zijn	1			1
*être caché	1			1
*Path	1	2		3
*passen		1		1
*sortir	1	1		2
*PathCause	1	2		3
*atterir		1		1
*fall	1			1
*tomber		1		1
/	15	34	13	62
%		3		3
/	15	30	11	56
<>		1		1
implicit			2	2
Cause	62	44	30	136
doen	1			1
geven	16	11	1	28
grijpen			1	1
hebben	1	1	2	4
houden			5	5
krijgen		1		1
laten	1		1	2
nemen	41	28	2	71
pakken	1	1	9	11
plaatsen	1	2		3
vangen			1	1
vasthebben			2	2
vasthouden			2	2
vastpakken			1	1
voeden			1	1
voederen			2	2
Manner	71	97	210	378
een aanloop nemen			2	2

	DU2a	DU2c	DU	Total
een grote spring doen		1		1
een spring te doen		1		1
hangen		1		1
klimmen			1	1
kruipen			4	4
liggen	3	2	3	8
lopen	34	44	36	114
peddelen			2	2
rennen	7	6	2	15
roeien			5	5
spatelen			1	1
springen	10	9	15	34
spuren			1	1
staan	5	10	18	33
staan te wachten			1	1
stappen		1	1	2
varen			7	7
vliegen	9	13	13	35
wandelen	2	7	10	19
zitten	1	2	86	89
zitten te lopen			1	1
zitten verstoep			1	1
MannerCause	17	22	56	95
een shot geven			1	1
glijden	2	1	4	7
gooien	11	8	33	52
hangen	1			1
lanceren		2		2
leggen		2		2
rijden			1	1
rollen			1	1
schoppen			1	1
schuiven			1	1
sjoten		1	2	3
sjotten		1		1
slepen			2	2
sleuren			1	1
stampen			1	1
steken			3	3
stoppen			2	2
zetten	3	7	2	12
zitten te gooien			1	1
MannerPath	1		29	30
duiken	1			1
gaan staan			1	1

	DU2a	DU2c	DU	Total
ijsberen			5	5
komen lopen			1	1
lopen te ijsberen			1	1
ontkomen			1	1
ontsnappen			10	10
patrouilleren			1	1
polsstokspringen			8	8
vluchten			1	1
MannerPath (prefix)	1	3	66	70
aanlopen			2	2
aanrennen			1	1
achteraanlopen			1	1
aflopen			1	1
afspringen			3	3
afvliegen			1	1
doorlopen		2	4	6
inlopen			2	2
inspringen			1	1
overlopen			1	1
overvliegen			1	1
rondjagen			1	1
rondlopen			2	2
rondwandelen			3	3
teruglopen			5	5
terugvliegen			2	2
uitlopen		1	1	2
uitspringen			1	1
voorbijlopen			1	1
wegkomen			1	1
weglopen	1		15	16
wegrennen			3	3
wegschrikken			1	1
wegspringen			2	2
wegspurten			1	1
wegvliegen			4	4
wegvluchten			3	3
wegwandelen			1	1
zich afduwen			1	1
MannerPathCause	4	10	38	52
duiken		2		2
duwen			4	4
komen duwen		1		1
maken vallen		1		1
omkantelen			1	1
trekken	3	6	12	21

	DU2a	DU2c	DU	Total
uittrekken			1	1
wegtrappen			1	1
zinken	1		19	20
MannerPathCause (prefix)		3	40	43
ingooien			3	3
inschuiven			1	1
meesleuren			5	5
meetrekken			1	1
neerzetten			1	1
rondrijden			1	1
terugduwen			1	1
terugglijden			2	2
teruggooien			2	2
toegooien			1	1
uitglijden			4	4
uitgooien			1	1
uitschuiven			1	1
uittrekken			2	2
wegdrijven			1	1
weggliden			1	1
weggooien		2	4	6
wegrollen			1	1
wegschuifelen			1	1
wegsjoten			1	1
wegstampen			2	2
wegtrappen			3	3
wegtrekken		1		1
Neutral	87	123	38	248
blijven	4	1		5
denken	1	2		3
doen		3	1	4
ellipses		1		1
eten	1			1
gebruiken		1		1
hebben	1			1
kwikwi	1			1
piepen			1	1
poef	1			1
stoppen met lopen			1	1
vechten		1		1
verdrinken			3	3
vinden	1			1
wachten	5	4	2	11
zich verstoppen			11	11
zien		6	2	8

	DU2a	DU2c	DU	Total
zijn	72	104	17	193
Path	87	106	52	245
gaan	65	80	22	167
gaan verstoppen		1		1
gaan voederen			1	1
gaan voeren			1	1
geraken			2	2
komen	12	13	23	48
verdwijnen		2		2
vertrekken	7	10		17
volgen	2		3	5
zich gaan verstoppen	1			1
Path (prefix)	16	14	53	83
aangaan			3	3
aankomen			2	2
achterkomen			1	1
achternagaan			1	1
achternakomen			2	2
achtervolgen			6	6
afkomen			4	4
binnengaan			2	2
binnenkomen			1	1
binnenlopen			1	1
doorgaan	1	2		3
implicit			1	1
ingaan			2	2
ondergaan			1	1
tegenkomen			1	1
terechtkomen			1	1
teruggaan	4	3	6	13
terugkomen	1	2	3	6
uitgaan	1	1	2	4
uitkomen			1	1
verdergaan	1			1
weg(gaan)		1		1
weggaan	8	5	11	24
wegkomen			1	1
PathCause	16	18	15	49
belanden			1	1
brengen	1	1	1	3
dompelen			1	1
dopen			1	1
halen			1	1
landen			1	1
leiden			1	1

	DU2a	DU2c	DU	Total
sturen		1		1
vallen	15	16	8	39
PathCause (prefix)	2	1	7	10
inzakken			1	1
meenemen			2	2
terecht komen			2	2
terugbrengen	1			1
terugnemen	1		1	2
uithalen			1	1
wegbrengen		1		1
Total	419	515	647	1582

Table III.1: Verbs used in L1 Dutch and L2 Dutch

c. L1 French

	FR	Total
/	2	2
/	2	2
Cause	51	51
attraper	11	11
mettre	15	15
poser	1	1
prendre	20	20
se mettre	1	1
tenir	3	3
Manner	81	81
être assis	1	1
courir	17	17
faire comme les sauts	1	1
faire des mouvements pour ramer	1	1
faire un bond	2	2
flotter	1	1
foncer	1	1
marcher	12	12
pagayer	5	5
prendre son l'élan	1	1
ramer	3	3
recourir	2	2
sauter	12	12
se la couler douce	1	1
se lancer	1	1
se promener	3	3
se tenir	1	1
s'extirper	1	1
tracer un sprint	1	1

	FR	Total
voler	15	15
MannerCause	98	98
balancer	3	3
conduire	1	1
donner un coup de pied	1	1
envoyer	2	2
faire trainer	1	1
faire un coup de pied	1	1
faire un dégagement	1	1
glisser	20	20
jeter	19	19
lancer	31	31
mettre un coup de pied	1	1
pendre	1	1
piquer	1	1
relancer	2	2
renvoyer	2	2
rouler	2	2
se balancer	1	1
se faire jeter	1	1
shoter	6	6
trainer	1	1
MannerPath	40	40
commencer leur course poursuite	1	1
courir - partir	1	1
échapper	1	1
faire comme le saut en hauteur	1	1
faire de <> comme un peu de la perche, du saut à la perche	1	1
faire de la perche	1	1
faire du saut à la perche	3	3
faire les cent *	1	1
faire les cent pas	8	8
faire marche arrière	2	2
faire un saut à la perche	1	1
faire un saut très haut	1	1
fuir	2	2
sauter & sortir	1	1
se courir après	1	1
s'échapper	9	9
s'élancer	4	4
surgir	1	1
MannerPath (prefix)	20	20
pourchasser	6	6
se courir après	1	1

	FR	Total
s'enfuir	9	9
s'envoler	4	4
MannerPathCause	50	50
couler	22	22
éjecter	1	1
envoyer valdinguer	1	1
faire tanguer	1	1
planter	2	2
plonger	3	3
pousser	2	2
tirer	18	18
Neutral	184	184
/	1	1
être	89	89
être caché	2	2
être posé	4	4
être rempli de	1	1
apercevoir	1	1
attendre	3	3
c'est	3	3
continuer	1	1
disparaître	1	1
donner	2	2
faire <>	1	1
il y a	42	42
il y a + être	1	1
réfléchir	2	2
rendre	1	1
rester	6	6
se cacher	12	12
se mettre	1	1
se planquer	1	1
se retrouver	6	6
voir	2	2
voir + dépasser	1	1
Path	199	199
être (a été)	6	6
aller	15	15
aller donner à manger	1	1
aller se cacher	1	1
arriver	32	32
avancer	11	11
descendre	4	4
Faire demi-tour	1	1
faire des allers-retours	7	7

	FR	Total
finir	1	1
monter	3	3
partir	25	25
passer	14	14
recule	1	1
reculer	1	1
rejoindre	1	1
rentrer	13	13
repartir	2	2
repartir - ressortir	1	1
repasser	1	1
rerentrer	1	1
ressortir	7	7
retourner	6	6
revenir	2	2
s'approcher	1	1
se diriger	3	3
sortir	25	25
suivre	2	2
tourner	2	2
traverser	2	2
venir	4	4
venir chercher	1	1
Path (prefix)	15	15
poursuivre	4	4
se poursuivre	1	1
s'en aller	10	10
PathCause	51	51
amener	1	1
apporter	1	1
atterrir	3	3
emmener	3	3
faire sortir	1	1
remonter	1	1
ressortir	3	3
retourner	1	1
sortir	3	3
tomber	29	29
tremper	5	5
PathCause (prefix)	4	4
s'enfoncer	4	4
Total	794	794

Table III.2: Verbs used in L1 French

Résumé en français

1. Introduction

Le présent travail a pour but de détailler comment les événements de mouvements sont exprimés dans la langue orale et les gestes co-verbaux, c'est-à-dire les gestes que nous produisons spontanément quand nous parlons, en français langue première, néerlandais langue première et néerlandais langue seconde pour des francophones.

Ce travail repose d'une part sur les études typologiques qui ont mis en lumière les différences entre les langues à cadrage verbal et les langues à satellite (Talmy 1985) et le « penser pour parler » (Slobin 1991), l'importance des gestes co-verbaux dans la communication et leurs caractéristiques spécifiques aux langues (Kendon 1972; Kendon 1980; McNeill 1992; McNeill 2005; Alibali, Kita & Young 2000; Urbanski & Stam 2023) et les études sur les influences cross-linguistiques lors de l'apprentissage de langues étrangères (e.g., Jarvis & Pavlenko 2008; Bassetti & Cook 2011). Il s'appuie particulièrement sur l'hypothèse du « penser pour parler » et l'hypothèse de l'interface formulée par Kita & Özyürek (2003). La première stipule que quand nous acquérons notre première langue, nous n'acquérons pas seulement la grammaire mais aussi un canevas pour schématiser nos expériences (Slobin 1991). En d'autres termes, nous acquérons une manière de penser pour parler et nous sommes « entraîné-es à prêter attention à des aspects en particulier. Dans le domaine des événements de mouvement, ceci est reflété par le fait que les locuteur·ices d'une langue germanique vont plus se focaliser sur la manière qui est facilement encodable dans le verbe tandis que les locuteur·ices de langues à cadrage verbal vont avoir tendance à l'omettre dans leurs descriptions si elle n'est pas saillante. L'hypothèse d'interface prédit que les langues où la manière et la direction sont encodées de façon étroite dans une unité linguistique, les gestes auront tendance à l'être aussi. En d'autres termes, les locuteur·ices de langues à satellite vont avoir tendance à encoder la manière et la direction dans un seul et même geste si la construction utilisée dans la langue parlée rassemble ces deux composants sémantiques aussi. À l'inverse, les locuteur·ices des langues à cadrage verbal vont avoir tendance à produire deux gestes

distincts, un représentant la manière et l'autre la direction comme ces deux informations sont encodées séparément dans la langue.

Les études sur le « penser pour parler » en langue seconde montrent qu'il est difficile de restructurer le modèle acquis avec la langue première. Les apprenant·es ont en effet tendance à continuer à penser dans leur première langue pour parler dans leur seconde. Ces études, d'abord sur la langue parlée ou écrite uniquement, ont ensuite été étendues au langage multimodal. Elles ont en effet pris les gestes des locuteur·ices en compte et il en est ressorti que les gestes montrent des caractéristiques qui sont propres aux langues et permettent de voir dans quelle langue les apprenant·es pensent quand il·elles parlent (e.g., Negueruela et al. 2004; Stam 2006; Stam 2018).

Le groupe cible de ce travail est un groupe d'élèves en immersion néerlandais tardive (EMILE : Enseignement de Matières par l'Intégration d'une Langue Étrangère). Le but était d'avoir des apprenant·es qui acquièrent et apprennent leur langue cible. Le présent travail inclut un état des lieux de l'enseignement en immersion en Belgique francophone et présente une analyse détaillée des mentions de concepts tels que « geste », « espace », « déplacement » dans les documents officiels qui régissent et guident l'enseignement des langues à savoir le Cadre européen commun de référence pour les langues (Council of Europe 2020), le référentiel *Compétences terminales et savoirs requis à l'issue des humanités générales et technologique: Langues modernes (2017)* et le programme des langues modernes de la Fédération de l'Enseignement secondaire catholique de la Fédération Wallonie-Bruxelles. Ceux-ci sont très peu mentionnés et les gestes sont principalement considérés comme un moyen pouvant aider les apprenant·es à comprendre et s'exprimer. Or, les gestes ont des fonctions bien plus importantes que cela. En ce qui concerne les notions d'espace et déplacement, les quelques mentions font référence aux transports et déplacements ou aux déplacements liés à la vie quotidienne. En d'autres termes, ils n'incluent pas du tout les événements de mouvement comme décrits ici et limitent les apprentissages à des niveaux de base.

Les questions de recherche, élaborées sur base de la littérature existante, sont donc les suivantes :

Q1 : Quels sont les composants sémantiques que les locuteur·ices belges francophones encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Q2 : Quels sont les composants sémantiques que les locuteur·ices belges néerlandophones encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Q3 : Quels sont les composants sémantiques que les apprenant·es francophones du néerlandais encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Q4 : Sur une période de deux ans, est-ce que le « parler pour penser » des apprenant·es francophones en immersion néerlandais a évolué vers un modèle plus néerlandais ?

Les hypothèses suivantes ont été formulées :

H1 : (a) Les locuteur·ices francophones se concentreront principalement sur la direction dans leurs descriptions orales et gestes

(b) Les gestes de trajectoire des locuteur·ices francophones seront produits en même temps que le verbe

H2 : (a) Les locuteur·ices néerlandophones accorderont davantage d'importance à la manière et tendront à regrouper de façon plus étroite la manière et la trajectoire, tant dans la parole que dans les gestes ;

H3 : (a) Les apprenant·es en immersion continueront à encoder la trajectoire dans la parole et les gestes au niveau débutant et partiellement au niveau intermédiaire ;

(b) les gestes de trajectoire des apprenant·es en EMILE coïncideront à la fois avec le verbe et le satellite.

H4: (a) Les apprenant·es en EMILE encoderont davantage de composants sémantiques au fil du temps ;

(b) les gestes des apprenant·es en EMILE ressembleront davantage à ceux des locuteur·ice·es néerlandais.

2. Méthode

Pour répondre à ces questions, j'ai réalisé une expérience à laquelle 15 locuteur·ices francophones, 14 locuteur·ices néerlandophones et 15 apprenant·es francophones du néerlandais ont participé. Les apprenant·es ont répété l'expérience afin que je puisse étudier leur évolution. Avant chaque participation, il·elles ont passé un test de niveau sur la plateforme *Wallangues* (Région Wallonne 2012) qui comprenait quatre parties : grammaire, vocabulaire, compréhension à la lecture et compréhension à l'audition. Tou·tes les participant·es ont également rempli un questionnaire sur leurs connaissances linguistiques et leur relation avec le néerlandais (ou le français pour les néerlandophones). Les participant·es devaient avoir été élevé·es en une seule langue. L'expérience consistait à raconter des fragments d'un épisode de Titi & Grosminet : Tweet Zoo (Freleng 1957). Dans cet épisode, les personnages sont amenés à réaliser des mouvements de différentes sortes, certains très communs (marcher, courir, sauter), d'autres plus rare (faire du saut à la perche, ramer). Les participant·es ne connaissaient pas l'objet de l'étude et les apprenant·es n'avaient pas la moindre idée de ce qui était analysé comme l'ont montré les questionnaires que je leur ai fait remplir à la fin de l'expérience. J'ai ensuite transcrit les données en suivant un schéma développé par McNeill (1992) qui consiste en l'indication des pauses, interruptions, et sons. Les données ont ensuite été analysées dans le logiciel ELAN, développé par le Max Planck Institute for Psycholinguistics. J'ai élaboré un schéma d'analyse en trois niveaux : la langue, les gestes, la langue et les gestes. Tout d'abord, j'ai identifié chaque phrase qui contenait un évènement de mouvement et je l'ai identifiée avec le code qui correspondait au mouvement décrit sur base d'une liste que j'avais établie au préalable. Ensuite, j'ai annoté chaque verbe et satellite en précisant de quels composants sémantiques ils font part. Pour l'analyse des verbes, je me suis basée sur des taxonomies existantes et la base de données DinaVmouv (Kopecka 2006; Lewandowski 2021; Ozçakalistan & Slobin 1999; Aurnague 2008; Van Staden, Bowerman & Verhelst 2006, Stosic, Minoccheri & Aurnague 2023). En ce qui concerne l'analyse des gestes, j'ai d'abord identifié le type de geste (voir Section 4.8.2.1 pour des exemples). Parmi les types de gestes, on distingue : les gestes iconiques qui représentent des objets ou actions concrètes, les gestes déictiques qui sont des gestes

de pointage et servent à localiser des entités dans l'espace, les gestes métaphoriques qui représentent des concepts abstraits, des gestes de battements qui indiquent le rythme et des gestes pragmatiques qui peuvent avoir plusieurs fonctions dont des fonctions modales (McNeill 1992, Kendon 2004, Kendon 2017). Les deux dernières catégories sont des gestes non-référentiels, c'est-à-dire qu'ils ne contribuent pas au contenu de la phrase à l'inverse des gestes iconiques, métaphoriques et déictiques qui, eux, sont référentiels. Les gestes référentiels ont ensuite été analysés plus en profondeur : j'ai identifié leurs composants sémantiques (voir Section 4.8.2.2 pour des exemples), la perspective depuis laquelle ils étaient produits (narrateur ou observateur (McNeill 1992, Parrill 2011)), avec quelle unité linguistique ils étaient synchronisés, et avec quels composants sémantiques de la langue parlée ils étaient associés.

3. Résultats

3.1. En français et néerlandais L1

Cette section a pour but de répondre aux questions suivantes :

Q1 : Quels sont les composants sémantiques que les locuteur·ices belges francophones encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Q2 : Quels sont les composants sémantiques que les locuteur·ices belges néerlandophones encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Les locuteur·ices L1 du français ont tendance à encoder la trajectoire dans le verbe pour exprimer des événements de mouvement autopropulsé (*self-propelled motion events*). De plus, il·elles utilisent également des verbes de manière, mais dans une moindre mesure. Il·elles utilisent un plus grand nombre de verbes de trajectoire différents que les locuteur·ices L1 du néerlandais. Par ailleurs, les locuteur·ices L1 du français encodaient le plus souvent uniquement la trajectoire dans leur discours, et les événements de franchissement de frontière (*boundary crossing*) étaient principalement exprimés avec un verbe de trajectoire. Ces résultats sont conformes au schéma typique des langues à cadrage verbal. Bien qu'il y ait eu des occurrences décrivant un événement de

franchissement de frontière avec un verbe de manière, celles-ci étaient plutôt rares comparées à celles utilisant un verbe de trajectoire.

Pour exprimer des événements de mouvement causé intentionnel, les locuteur·ices L1 du français avaient tendance à encoder la manière-cause dans le verbe. Les locuteur·ices L1s du français utilisaient moins de verbes différents que les locuteur·ices L1 du néerlandais, mais davantage de verbes de manière-cause si l'on ne prend en compte que les verbes simples. Les locuteur·ices L1 du français encodaient soit la manière et la cause dans leur discours, soit la manière, la trajectoire et la cause. De plus, il·elles exprimaient les événements de franchissement de frontière à l'aide de verbes de trajectoire-cause ou de manière-cause. Ces résultats ne correspondent ni au schéma typique des langues à cadre verbal, ni aux résultats de l'étude de Hendriks, Hickmann & Demagny (2008) qui ont constaté que les locuteur·ices L1 du français utilisaient les constructions causatives complexes *faire* + verbe de trajectoire ou de manière. Cette construction a également été retrouvée dans les données, mais pas aussi fréquemment qu'on aurait pu s'y attendre. Une explication possible de l'encodage de la manière dans le verbe réside dans sa saillance dans les événements présents dans les stimuli. La plupart des événements décrits ici ne nécessitaient pas de constructions causatives complexes, ce qui montre que le français présente aussi des caractéristiques des langues à cadre satellitaire.

Pour exprimer des événements de mouvement causés de manière involontaire, les locuteur·ices L1 du français ont utilisé un verbe trajectoire-cause, un verbe manière-trajectoire-cause ou un verbe manière-cause. Les locuteur·ices L1 du français ont utilisé moins de verbes différents que les locuteur·ices L1 du néerlandais. Il·elles avaient tendance à encoder les trois composants dans leur discours ou seulement la trajectoire et la cause. Enfin, il·elles expriment principalement les événements de franchissement de frontière avec des verbes trajectoire-cause. Ce schéma correspond à celui attendu pour les langues à cadre verbal.

Les locuteur·ices L1 du français n'ont pas localisé les entités plus fréquemment que les locuteur·ices L1 du néerlandais (ni que les apprenant·es), ce qui contredit l'affirmation de Slobin (1996a) selon laquelle les locuteur·ices des langues à cadrage verbal concentrent davantage sur la mise en scène statique que ceux des langues à satellites. En revanche, cela correspond aux résultats de Cadierno (2004), qui montrent que les langues romanes

présentent des schémas mixtes en ce qui concerne les processus et la mise en scène. Sans surprise, les locuteur·ices L1 du français ont localisé les entités en utilisant des verbes neutres associés à des satellites de localisation, tandis que les locuteur·ices L1 du néerlandais ont employé des verbes de manière avec des satellites de localisation. Ces résultats s'accordent avec des études antérieures sur les événements de localisation en français et en néerlandais (Lemmens & Perrez 2010; Lemmens & Perrez 2012; Lemmens & Perrez 2018).

Les locuteur·ices L1 néerlandais avaient tendance à utiliser des verbes de manière, des verbes de manière avec un préfixe de direction ou des verbes de déplacement avec un préfixe de direction pour exprimer des événements de mouvement autopropulsé. Il·elles n'utilisaient pas souvent les verbes de direction seuls. Les locuteur·ices du français L1 utilisaient une plus grande variété de verbes de manière si l'on ne considère que les verbes simples. Cependant, le néerlandais possède un grand nombre de verbes complexes dans lesquels la manière est encodée dans le radical et la direction dans un préfixe. C'est cette catégorie qui comprend le plus grand nombre de verbes différents en néerlandais L1. Les différences dans la sémantique des verbes entre le français et le néerlandais étaient significatives. Contrairement aux locuteur·ices L1 français, les locuteur·ices L1 néerlandais avaient tendance à encoder à la fois la manière et la direction dans leur discours, et à exprimer les événements de franchissement de limites avec des verbes de manière. Ces résultats sont conformes au schéma typique des langues à satellite. Toutefois, dans une certaine mesure, les locuteur·ices L1 néerlandais ne mentionnaient également que la trajectoire, ce qui montre l'importance de ce composant sémantique dans le mouvement.

Les locuteur·ices L1 du néerlandais utilisaient des verbes complexes dans lesquels la manière et la cause sont exprimées dans le radical et la trajectoire dans un préfixe, des verbes manière-cause et des verbes manière-trajectoire-cause pour exprimer des événements de mouvement intentionnellement causés. Là encore, les différences au niveau de la sémantique verbale entre les locuteur·ices L1 du français et du néerlandais étaient significatives. De même que pour les événements de mouvement autopropulsé, on constate que le néerlandais possède un grand nombre de verbes complexes qui véhiculent la manière et la cause via le radical et la trajectoire via un préfixe. Les locuteur·ices L1 néerlandais ont codé la manière, la trajectoire et la cause dans la majorité des cas, et donc

plus fréquemment qu'en L1 français. Il·elles ont exprimé les événements impliquant le franchissement d'une frontière avec des verbes manière-trajectoire-cause munis d'un préfixe et des verbes manière-cause. Les résultats confirment l'encodage satellitaire du néerlandais et sa riche palette verbale. Les locuteur·ices L1 du néerlandais ont tendance à encoder la manière, la trajectoire et la cause dans les verbes, avec ou sans préfixe, pour décrire des événements de mouvement causés de manière non intentionnelle. Là encore, on observe que le néerlandais offre une grande diversité de verbes complexes. Il·elles ont codé la manière, la trajectoire et la cause à l'oral plus fréquemment que les autres groupes et il·elles ont surtout exprimé les franchissements de frontières avec des verbes manière-trajectoire-cause. Ces résultats sont également cohérents avec les schémas attendus des langues à cadrage satellitaire.

Les locuteur·ices L1 néerlandais avaient tendance à coder la manière, la trajectoire et la cause dans les verbes, avec ou sans préfixe. Une fois de plus, nous pouvons observer que le néerlandais se distingue par une grande variété de verbes complexes. Il·elles ont codé la manière, la trajectoire et la cause à l'oral plus fréquemment que les autres groupes et ont exprimé les événements de franchissement de frontière principalement à l'aide de verbes exprimant la manière, la trajectoire et la cause. Ces résultats correspondent également aux schémas attendus pour les langues à cadre satellite.

Enfin, l'analyse de densité menée pour les deux groupes L1 et dans tous les types d'événements a révélé que la présence ou l'absence de gestes n'a aucun impact sur la densité sémantique. En d'autres termes, les locuteur·ices de L1 ont encodé les mêmes éléments dans la parole, avec ou sans gestes.

Dans l'ensemble, les schémas linguistiques de penser pour parler en français et en néerlandais sont confirmés par les résultats mentionnés ci-dessus, même si le français présente davantage de variations. Les résultats restent néanmoins cohérents avec les recherches antérieures ayant démontré que les schémas en français étaient moins directs que ceux des langues germaniques.

En ce qui concerne l'expression multimodale, Les locuteur·ices L1 du français ont tendance à faire des gestes de trajectoire lorsqu'il·elles décrivent des événements de mouvement autopropulsé et causé de manière non intentionnelle. Il·elles n'ont pas tendance à faire des gestes fusionnés (*conflated gestures*) ni à systématiquement réaliser

deux gestes distincts pour exprimer la manière et la trajectoire. La première partie de la première hypothèse est donc confirmée, sauf pour les événements de mouvement causés de manière intentionnelle. Cela pourrait s'expliquer par le fait qu'il·elles avaient tendance à incarner et à mimer l'agent qui déplace la figure. Les locuteur·ices L1 du français faisaient principalement des gestes de trajectoire au moment de prononcer le verbe. Cela correspond aux résultats précédents concernant l'espagnol (langue VF) (Stam 2006; Stam 2008; Negueruela et al. 2004; Choi & Lantolf 2008). En ce qui concerne les composants sémantiques encodés dans les énoncés multimodaux, les locuteur·ices L1 du français ont tendance à exprimer uniquement la trajectoire à l'oral et en geste, ou la manière et la trajectoire à l'oral accompagnées d'un geste de trajectoire pour décrire des événements de mouvement autopropulsé. Lorsqu'il·elles décrivent pour les événements de mouvement causés intentionnellement, il·elles ont tendance à faire des gestes de type manière-trajectoire-cause et à les combiner avec la manière, la trajectoire et la cause dans leur discours. Dans leurs descriptions des événements de mouvement causés de façon non intentionnelle, il·elles expriment soit la trajectoire et la cause dans le discours accompagné d'un geste de trajectoire, soit la manière, la trajectoire et la cause dans le discours avec un geste de trajectoire. Enfin, pour localiser des entités, il·elles combinent un verbe neutre avec un satellite de lieu et un geste de localisation qui coïncide soit avec le satellite, soit avec le verbe, soit avec la figure. Cela répond ainsi à la première question de recherche. Globalement, la première hypothèse est confirmée à l'exception des événements de mouvement causés intentionnellement, où les gestes manière-trajectoire-cause sont plus fréquents que les gestes de trajectoire. Ce type d'événement suscite davantage de gestes caractérisant le point de vue du personnage, représentant la manière et la cause, et parfois la trajectoire.

Fait surprenant, les locuteur·ices L1 néerlandais montrent le même comportement gestuel que les locuteur·ices L1 français lorsqu'il·elles décrivent des événements de mouvement autopropulsé. En effet, il·elles ont tendance à faire uniquement des gestes de trajectoire et n'ont pas tendance à faire ni des gestes conflés ni deux gestes séparés. La première partie de l'hypothèse H2 est donc partiellement réfutée. Bien que les locuteur·ices L1 néerlandais se concentrent sur la manière et la trajectoire dans la parole, il·elles tendent à ne transmettre que la trajectoire dans les gestes. Selon l'hypothèse d'interface (Kita & Özyürek 2003), on pourrait s'attendre à ce qu'il·elles produisent des

gestes fusionnés puisqu'il·elles combinent étroitement la trajectoire et la manière dans la parole. Néanmoins, ces gestes sont très rares. Ces résultats remettent donc en question l'hypothèse de l'interface. Une explication possible de cette divergence réside dans la variation des stimuli et, par conséquent, dans la nature des événements de mouvement. Cette hypothèse a d'abord été formulée à partir de données recueillies grâce à *Canary Row* (Freleng 1950) mais la plupart des études qui la soutiennent ont ensuite utilisé les courts métrages animés *Tomato Man* (2001) comme stimulus. Je soutiens que, puisque ces courts métrages représentent des manières de se mouvoir très spécifiques et peu conventionnelles, les locuteur·ices ont tendance à exprimer la manière de façon plus systématique dans les gestes que lorsqu'il·elles décrivent des événements plus authentiques. De plus, les participants à la présente expérience ignoraient qu'elle portait sur des événements de mouvement et, par conséquent, qu'on attendait d'ell·eux qu'il·elles les décrivent. Il·elles ont simplement été invité·es à raconter l'histoire, ce qui implique que l'attention n'était pas portée sur les événements de mouvement. Tant les descriptions orales que les gestes qu'il·elles ont fait ici faisaient partie d'une narration plus large. Hickmann, Hendriks & Gullberg (2011) ont également constaté que les adultes anglophones L1 produisaient principalement des gestes de trajectoire lorsqu'il·elles décrivaient des déplacements volontaires. Pour recueillir ces données, il·elles ont utilisé de courts films d'animation mettant en scène soit des animaux (marchant sur la pointe des pieds, marchant, courant, rampant, etc.), soit des êtres humains (nageant, faisant du vélo, patinant, rampant, etc.). Leurs résultats indiquaient que les locuteur·ices anglophones transmettaient plus d'informations dans la parole que dans les gestes, ce qui rejoint ce que j'ai observé chez les locuteur·ices L1 du néerlandais. Leurs stimuli représentaient des personnages réels effectuant des actions de mouvement courantes (et d'autres moins fréquentes mais néanmoins plausibles). J'avance donc que, bien que les locuteur·ices des langues germaniques puissent faire des gestes fusionnés plutôt que deux gestes distincts, puisqu'il·elles ont tendance à condenser l'information tant dans la parole que dans les gestes, contrairement aux locuteur·ices de langues à cadre verbal, il·elles n'intègrent pas systématiquement à la fois la manière et la trajectoire dans les gestes lorsqu'il·elles décrivent des déplacements auto-propulsés et des événements de mouvement causés involontairement. Les locuteur·ices L1 du néerlandais tendent à combiner la manière et la trajectoire dans la parole avec un geste de trajectoire lorsqu'il·elles décrivent des déplacements auto-propulsés, la manière, la trajectoire et la

cause à la fois dans la parole et les gestes lorsqu'il·elles expriment des événements de mouvement causés intentionnellement, la manière et la trajectoire dans la parole avec un geste de trajectoire lorsqu'il·elles décrivent des événements de mouvement causés involontairement, et la manière et la localisation dans la parole avec un geste de localisation pour situer des entités. La première partie de l'hypothèse H2 est partiellement réfutée : les locuteur·ices néerlandais L1 ont effectivement tendance à condenser la manière et la trajectoire dans la parole, mais comme nous l'avons vu, il·elles ont aussi tendance à faire uniquement des gestes de trajectoire lorsqu'il·elles décrivent des déplacements auto-propulsés et des événements de mouvement causés involontairement. La première partie de la seconde hypothèse est donc confirmée pour les événements de mouvement causés intentionnellement et pour l'attention portée à la manière dans la parole, dans tous les types d'événement.

En ce qui concerne la deuxième partie de H2, les locuteur·ices L1 du néerlandais ont tendance à faire des gestes de trajectoire en prononçant les satellites, mais ce n'est pas toujours le cas. Les participant·es néerlandophones l'ont également fait en exprimant le verbe. Dans leurs descriptions d'événements de mouvement causé de manière involontaire, leurs gestes de trajectoire accompagnaient le verbe plus fréquemment que le satellite, et il·elles réalisaient leurs gestes de trajectoire légèrement plus souvent avec le verbe et le satellite lorsqu'il·elles décrivaient des événements de mouvement autopropulsé (seulement 2 % de différence). En revanche, Kellerman & van Hoof (2003) ont constaté que les gestes de trajectoire des locuteur·ices néerlandophones coïncidaient avec le satellite dans environ 55 % des cas, alors qu'ici, il·elles le font à peine dans 22,14 % des cas dans le contexte de mouvements autopropulsés, 20,69 % dans le cas de mouvements causés intentionnellement et 15,63 % dans le contexte de mouvements causés involontairement. Kellerman & van Hoof (2003) ont considéré à la fois le satellite et le syntagme du satellite, ce qui correspondrait au satellite et au satellite + *ground* dans la présente étude. Cela explique en partie la différence. L'analyse a été approfondie pour examiner l'influence du composant sémantique encodé dans le verbe sur la synchronisation des gestes de trajectoire dans le contexte des événements de mouvement autopropulsé. Les gestes de trajectoire des néerlandophones coïncidaient plus souvent avec le satellite lorsque le verbe exprimait la manière, et moins fréquemment avec le verbe + satellite, mais la différence était moins marquée que je ne l'avais prévu. Il serait

nécessaire de recueillir davantage de données pour évaluer cette différence, car les locuteur·ices L1 du néerlandais n'utilisent pas très souvent les verbes exprimant la trajectoire.

Les événements de localisation causés ne sont pas inclus dans la discussion ci-dessus car la quantité de données était très limitée. Cependant, je pense qu'il est tout de même pertinent de mentionner que tant les locuteur·ices L1 français que néerlandais ont majoritairement intégré l'objet dans leurs gestes (c'est-à-dire que les participants francophones L1 ont réalisé des gestes exprimant la manière, la trajectoire et la cause plutôt que des gestes exprimant uniquement la trajectoire). Cette divergence par rapport aux études antérieures sur les événements causés (ou d'emplacement) pourrait également être due aux stimuli. Les événements de mouvement causé identifiés dans Tweet Zoo (Freleng 1957) n'étaient pas des événements prototypiques de localisation causée comparés à ceux utilisés dans les études sur les événements de placement. Je les ai considérés comme tels ici car ils correspondent à la définition fournie par Gullberg (2009b: 121): « la localisation causée est une sous-catégorie du « mouvement causé, où un agent fait en sorte qu'un objet se déplace vers une destination finale tout en maintenant un contrôle (manuel) dessus jusqu'à ce qu'il atteigne sa destination finale³⁴ », ceci en raison des choix verbaux des participants. Enfin, mes données confirment les conclusions de Parrill (2011) concernant le type de composants sémantiques encodés dans les gestes de point de vue du personnage et d'observateur. En effet, les gestes de point de vue du personnage représentaient le mode, le mode-cause ou encore le mode, la trajectoire et la cause, tandis que les gestes de point de vue de l'observateur étaient principalement utilisés pour exprimer la trajectoire, la localisation et le fond.

3.2. En néerlandais langue 2

Cette section a pour but de répondre aux questions suivantes :

³⁴ La définition originale est écrite en anglais et reprise telle quelle dans la thèse.

Q3 : Quels sont les composants sémantiques que les apprenant·es francophones du néerlandais encodent dans le verbe, le satellite et les gestes co-verbaux et comment est-ce que ces composants sont intégrés ?

Q4 : Sur une période de deux ans, est-ce que le « parler pour penser » des apprenant·es francophones en immersion néerlandais a évolué vers un modèle plus néerlandais ?

Pour décrire les événements de mouvement autopulsé, les locuteur·ices L2 du néerlandais ont principalement utilisé des verbes de trajectoire tant en 2021 qu'en 2023. Il·elles ont également utilisé des verbes de manière plus fréquemment que les locuteur·ices L1 (L1) du néerlandais, mais les verbes complexes dans lesquels la manière est encodée dans le radical et la trajectoire dans un préfixe sont apparus rarement dans les données L2. Une analyse plus fine des verbes employés par les locuteur·ices L2 du néerlandais a révélé qu'il·elles utilisaient très peu de verbes différents comparativement aux locuteur·ices L1. En fait, il·elles utilisaient sans cesse les mêmes quelques verbes. De plus, les apprenant·es L2 semblent avoir des difficultés à combiner les composants sémantiques dans une énonciation. Lorsqu'on examine chaque apprenant individuellement, on constate qu'il n'y a pas de progression linéaire. Certains ont produit plus de verbes de manière en 2023, d'autres moins de verbes de trajectoire et d'autres encore plus de verbes de trajectoire. Dans l'ensemble, il·elles n'ont pas utilisé plus de verbes en 2023 qu'en 2021. Les apprenant·es qui utilisaient une plus grande variété l'ont fait les deux années tandis que ceux qui n'utilisaient guère plus de cinq verbes différents l'ont également fait en 2021 et en 2023. Les différences dans la sémantique verbale entre le néerlandais L2 et le néerlandais L1 d'une part, et entre le néerlandais L2 et le français L1 d'autre part, étaient significatives (potentiellement en partie à cause des catégories supplémentaires contenant des formes incorrectes), mais aucune différence significative n'a été trouvée entre les apprenant·es en 2021 et eux-mêmes deux ans plus tard. Globalement, bien qu'il·elles semblent conscient·es du caractère « manière » du néerlandais, il·elles ont encore tendance à se focaliser uniquement sur la trajectoire comme en français L1 et n'ont pas tendance à encoder les deux composants à l'oral comme le font les locuteur·ices L1 néerlandais. Au contraire, il·elles tendent à n'encoder que la manière, ce qui pourrait faire partie de leur schéma développemental. Cela suggère que leur scénario de reconceptualisation est un mélange du transfert et des scénarios

créatifs/hybrides (Treffers-Daller & Tidball 2015). Seul·es les apprenant·es ayant un niveau de compétence avancé (CLIL1 et CLIL7) se distinguent du groupe car il·elles ont encodé les deux composants, ce qui laisse supposer que ce stade pourrait encore être atteint par les autres, même s'il convient de garder à l'esprit que ces deux participants ont fréquenté une école néerlandophone pendant deux à trois ans, ce qui signifie qu'il·elles ont été exposé·es à beaucoup plus d'input que les autres. Ces résultats sont cohérents avec des recherches antérieures sur la conceptualisation en L2 (« thinking-for-speaking ») qui ont montré que la L1 continue d'influencer le schéma de la L2 et que les apprenant·es manifestent à la fois des caractéristiques de leur langue première et de la langue cible (e.g., Cadierno 2004; Larrañaga et al. 2012) et soulignent également la nécessité d'enseigner les verbes de mouvement dans les cours de langue seconde.

Lorsqu'il·elles exprimaient des événements de mouvement causé intentionnel, les apprenant·es du néerlandais L2 avaient tendance à utiliser des verbes de cause, c'est-à-dire des verbes courants qui ne fournissaient aucune information sur la manière ou la trajectoire. Il·elles l'ont fait moins fréquemment en 2023, année où il·elles utilisaient plus souvent des verbes de manière-cause. Cependant, la différence entre 2021 et 2023 n'était pas significative. Néanmoins, les différences entre (1) les francophones L1 et les apprenant·es du néerlandais L2, et (2) les néerlandophones L1 et les apprenant·es du néerlandais L2 en termes de sémantique verbale, étaient significatives. Cela montre qu'il·elles ne se comportent comme des locuteur·ices L1 d'aucune des deux langues. De manière similaire au résultat relevant des événements de mouvement autopropulsés, l'analyse du nombre de verbes différents a révélé qu'il·elles utilisent moins de verbes que les locuteur·ices L1. Pourtant, il·elles utilisaient davantage de verbes différents en 2023 qu'en 2021. Les apprenant·es de L2 avaient tendance à n'exprimer que la cause dans leur discours, surtout en 2021. En 2023, il·elles encodaient également la manière, la trajectoire et la cause et la manière et la cause, en plus de trajectoire seule et du trajectoire-cause. Dans leurs descriptions d'événements de mouvement causé non intentionnel, les apprenant·es de L2 avaient tendance à encoder la trajectoire-cause dans les verbes, à la manière des locuteur·ices L1 du français, ou bien montraient un comportement propre en utilisant des verbes de trajectoire. Ce dernier cas peut être considéré comme une stratégie de simplification. Là encore, il·elles utilisent très peu de verbes différents en comparaison avec les locuteur·ices L1 et n'arrivent pas à encoder dans leur discours la manière, la

trajectoire et la cause comme le font les locuteur·ices L1 (les néerlandophones plus fréquemment que les francophones). Il·elles exprimaient principalement les événements de franchissement de frontières avec des verbes de trajectoire-cause, comme les francophones L1, ou avec des verbes de trajectoire. Ici encore, il·elles montrent un mélange des scénarios de transfert et de reconceptualisation créative (Treffers-Daller & Tidball 2015). Enfin, il y avait beaucoup de variation entre les apprenant·es. La plupart d'entre eux situaient les entités à l'aide de verbes neutres, tant en 2021 qu'en 2023. Il·elles se comportent ici clairement comme des locuteur·ices L1 du français et illustrent le scénario du transfert. Même les apprenant·es de niveau plus avancé utilisaient rarement des verbes de posture (sauf CLIL1), ce qui suggère que les nuances subtiles de ces verbes restent difficiles, et ce qui confirme les résultats antérieurs de Lemmens & Perrez (2010, 2012, 2018).

Enfin, l'analyse de densité effectuée sur les données de 2021 et de 2023, et pour tous les types d'événements, a révélé que la présence ou l'absence de gestes n'a aucun impact sur la densité sémantique. En d'autres termes, les locuteur·ices L2 ont encodé les mêmes éléments dans leur discours, avec ou sans gestes. Globalement, les schémas de penser pour parler des apprenant·es EMILE se situent entre ceux des francophones et des néerlandophones, tout en présentant leurs propres particularités. D'une part, on observe des cas clairs de transferts, et d'autre part, des indices de schémas développementaux. Au total, la somme de ces deux éléments constitue l'interlangue des apprenant·es.

Le nombre total de gestes par énoncé est plus élevé en L2 qu'en L1, tout comme le nombre de gestes référentiels, quel que soit le type d'événement. En effet, les apprenant·es de L2 produisaient des gestes pragmatiques beaucoup plus souvent que les locuteur·ices L1. Ces gestes survenaient principalement dans des situations où les apprenant·es cherchaient un mot (gestes de recherche lexicale). Les proportions de gestes référentiels par rapport aux gestes non référentiels étaient constantes selon les types d'événements. Autrement dit, les apprenant·es de L2 présentaient un comportement cohérent et aucun type d'événement ne leur semblait plus facile. De plus, il existe une plus grande variation dans les combinaisons de gestes en L2 qu'en L1. Alors que les locuteur·ices L1 ont tendance à produire un seul geste par énoncé, les apprenant·es de L2 ont tendance à les accumuler.

Lorsqu'il·elles exprimaient des événements de mouvement autopropulsé, les apprenant·es de L2 avaient tendance à effectuer un seul geste de manière, et ce, plus fréquemment que les locuteur·ices L1 (L1) qui utilisaient plutôt un seul geste de trajectoire, et davantage en 2023 qu'en 2021. Les gestes en point de vue personnage étaient plus fréquents dans DU2c et il·elles représentaient la manière. Les apprenant·es CLILa faisaient des gestes de trajectoire en même temps qu'il·elles prononçaient le verbe, suivis du satellite, tandis que les gestes de trajectoire des apprenant·es CLILc coïncidaient plus souvent avec le satellite qu'avec le verbe. À cet égard, les apprenant·es CLIL, et en particulier CLILc (car les proportions se rapprochent davantage du schéma L1), semblent pencher vers le schéma néerlandais, c'est-à-dire des gestes de trajectoire coïncidant légèrement plus souvent avec le verbe qu'avec le satellite, puisque, chez les locuteur·ices L1 français, les gestes de trajectoire coïncidaient principalement avec le verbe. La synchronisation des gestes de trajectoire lorsque l'énoncé comporte un verbe de trajectoire confirme cette tendance, même si les locuteur·ices L1 néerlandais synchronisaient aussi leurs gestes de trajectoire avec le verbe et le satellite, et que les apprenant·es le faisaient à peine. La synchronisation des gestes de trajectoire lorsqu'il y a un verbe de manière, ainsi que la synchronisation des gestes de manière, suggèrent également que les apprenant·es de L2 étaient en train de passer du schéma L1 au schéma L2. Néanmoins, l'analyse des combinaisons de composants sémantiques dans la parole et les gestes révèle que les apprenant·es de L2 présentent leur propre comportement, avec peu d'évolution sur deux ans. Il·elles ont tendance à encoder uniquement la trajectoire, même s'il·elles le font moins que les locuteur·ices L1 français. Il·elles restent encore loin du schéma néerlandais dominant, qui est la mention de la manière et de la trajectoire à l'oral, et la trajectoire dans les gestes.

Lorsqu'il·elles produisent des événements de déplacement causé intentionnel, les apprenant·es L2 ont réalisé des gestes fusionnés transmettant la manière, la trajectoire et la cause moins souvent que les locuteur·ices L1. En revanche, il·elles réalisaient plus fréquemment des gestes manière-cause et représentaient des objets plus souvent que les locuteur·ices L1, tout en faisant moins de gestes de trajectoire. Là encore, il·elles manifestent leur propre schéma, car il·elles utilisent principalement des verbes de cause et n'accumulent pas les composants sémantiques dans la parole, tout en réalisant des gestes différents de ceux produits par les deux groupes de locuteur·ices L1. Pour exprimer

des événements de déplacement causé involontaire, les apprenant·es CLIL avaient tendance à encoder la trajectoire et les apprenant·es CLILc le faisaient légèrement plus souvent que les locuteur·ices L1. De plus, il·elles réalisaient plus souvent des gestes « sol » que les locuteur·ices L1. En ce qui concerne la co-occurrence des unités de parole et des gestes de trajectoire, les apprenant·es L2 manifestaient des comportements qui leur étaient propres : en 2021, leurs gestes de trajectoire coïncidaient avec le verbe, mais moins fréquemment que chez les locuteur·ices L1 des deux langues, avec des satellites de manière similaire aux locuteur·ices L1 néerlandais et avec des pauses non remplies. En 2023, leurs gestes de trajectoire coïncidaient moins souvent avec des pauses non remplies, moins fréquemment avec des verbes et plus souvent avec des satellites (même davantage que chez les L1 néerlandais). De plus, leurs gestes de trajectoire ont tendance à coïncider avec d'autres éléments et avec plusieurs à la fois. Enfin, concernant les combinaisons des composants sémantiques, les apprenant·es L2 présentent là aussi un comportement spécifique : comme les locuteur·ices L1 français, il·elles ont tendance à encoder la trajectoire et la cause dans la parole, et la trajectoire dans les gestes, mais leur deuxième combinaison la plus fréquente est la trajectoire seule, aussi bien dans la parole que dans les gestes, comme pour les déplacements autopropulsés. Cette catégorie est beaucoup moins fréquente chez les locuteur·ices L1.

Enfin, pour situer les entités, les apprenant·es de L2 ont tendance à effectuer des gestes de localisation, mais moins fréquemment que les locuteur·ices L1 et plus fréquemment que les locuteur·ices L1. De plus, il·elles ont réalisé des gestes associés au sol plus fréquemment qu'en néerlandais L1. Les apprenant·es CLILc ont effectué des gestes de localisation plus souvent que les locuteur·ices L1 français et que les apprenant·es CLILa, et des gestes associés au sol moins fréquemment que les locuteur·ices L1 français et les apprenant·es CLILa, ce qui les rapproche du schéma néerlandais. En ce qui concerne la synchronisation des gestes, il existe une certaine variation, mais dans l'ensemble, les quatre groupes ont produit des gestes de localisation tout en prononçant le satellite, la figure ou le verbe (sauf dans DU2c). Enfin, la principale différence entre les locuteur·ices L1 néerlandais et les apprenant·es de L2 concerne les combinaisons de composants sémantiques à la fois dans la parole et dans les gestes. Comme démontré précédemment, les apprenant·es de néerlandais L2 ont tendance à localiser les entités en utilisant des verbes neutres, tandis que les locuteur·ices L1 néerlandais utilisent des verbes de posture.

Par conséquent, les constructions multimodales utilisées en L1 et en L2 diffèrent, puisque les locuteur·ices L1 ont tendance à combiner un verbe de posture avec un satellite de localisation et un geste de localisation, alors que les apprenant·es de L2 combinent un verbe neutre avec un satellite de localisation et un geste de localisation. La première partie de l'hypothèse H3 est confirmée, sauf pour les événements de mouvement intentionnellement causé où il·elles codent plutôt la manière et la cause. Cependant, l'hypothèse supposait au départ un transfert de leur L1, alors que les données ont montré que les locuteur·ices L1 néerlandais codent aussi majoritairement la trajectoire dans les gestes. On peut donc dire que les données montrent que les apprenant·es de néerlandais L2 ont bien produit des gestes de trajectoire, sans que cela soit interprété comme un transfert négatif de leur langue maternelle. De plus, il·elles ont également produit plus de gestes exprimant uniquement la manière que les locuteur·ices L1 des deux groupes. Cela pourrait être considéré comme une étape développementale, montrant qu'il·elles sont conscient·es de l'importance d'exprimer la manière en néerlandais, sans encore savoir comment le faire à l'oral. La deuxième partie de la troisième hypothèse est également confirmée, même s'il·elles présentent aussi leurs propres particularités et produisent certains gestes référentiels lors de pauses (non-)remplies ou d'autres éléments. La première partie de la quatrième hypothèse est réfutée, car les apprenant·es continuaient à encoder peu de composants en 2023 également. Cependant, une analyse plus fine a révélé que certains d'entre eux ont commencé à le faire. Enfin, la seconde partie de la quatrième hypothèse est partiellement confirmée, car il·elles tendent à synchroniser leurs gestes de manière plus similaire aux locuteur·ices L1 néerlandais en 2023 qu'en 2021 et ont également tendance à coder la trajectoire. Cependant, dans le cas des événements de mouvement intentionnellement causé, il·elles manifestent leur propre comportement et n'ont pas tendance à fusionner la manière-cause et la trajectoire dans un seul geste aussi fréquemment que les locuteur·ices L1.

Dans l'ensemble, bien qu'il·elles manifestent leur propre comportement, ou un comportement similaire à celui des locuteur·ices L1 du français (L1) à l'oral, leur comportement gestuel semble tendre vers le modèle néerlandais. C'est une conclusion plutôt inattendue. En effet, des recherches antérieures ont montré que le schéma multimodal de penser pour parler de la L1 est profondément ancré (Kellerman & van Hoof 2003; Negueruela et al. 2004; Stam 2006; Yoshioka & Kellerman 2006; Stam 2010;

Gullberg 2011; Alferink & Gullberg 2014) alors qu'ici, les apprenant·es présentent des divergences entre leurs comportements verbaux et gestuels. Cela pourrait être lié au fait que les locuteur·ices L1 du néerlandais font des gestes de trajectoire comme le font les locuteur·ices L1 du français. Les apprenant·es L2 ont peut-être transféré cela de leur L1 sans savoir qu'il s'agissait d'un transfert positif. En ce qui concerne la co-occurrence de la parole et des gestes, les apprenant·es L2, et tout particulièrement ceux du dispositif EMILE, semblaient tendre vers un modèle néerlandais. Cependant, il faut garder à l'esprit qu'il·elles avaient tendance à faire plusieurs gestes par énoncé, y compris plusieurs gestes véhiculant les mêmes composants sémantiques, ce qui suggère qu'il·elles n'agissaient pas totalement comme des locuteur·ices L1 du néerlandais. Une analyse qualitative approfondie est nécessaire pour déterminer dans quelle mesure leur schéma se rapproche de celui du néerlandais ou s'il·elles présentent leur propre schéma. On peut donc conclure que leur schéma de penser pour parler se situe quelque part entre ceux du français et du néerlandais. Dans la même logique où les apprenant·es L2 ont leur propre interlangue, on peut supposer qu'il·elles possèdent également un système intergestuel, révélant des traits de leur L1, de leur L2 ainsi que des caractéristiques propres.

