

Research Article

THE SPECIFICITY OF EVENT EXPRESSION IN FIRST LANGUAGE INFLUENCES EXPRESSION OF OBJECT PLACEMENT EVENTS IN SECOND LANGUAGE

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Abstract

Speakers show cross-linguistic differences in expressing placement events involving support (cup on table) and containment (apple in bowl) in first language (L1) contexts. They rely on either more-general (e.g., Spanish for support, Polish for containment) or more-specific (e.g., German, Polish for support; Spanish, German for containment) descriptions. Relatively less is known about the expression of placement events in second language (L2) production contexts. In this study, we examined object-placement event descriptions produced by two groups of L1 Polish speakers—with either German or Spanish as their L2—in comparison to monolingual speakers of German, Spanish, and Polish, using an animated event description task. Bilingual speakers showed greater effect of L1 patterns in moving from a more-general to a more-specific system and L2 patterns in moving from a more-specific to a more-general or between two more-specific systems, suggesting that the specificity of event expression in L1 influences patterns of placement expression in L2.

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INTRODUCTION

Speakers show systematic cross-linguistic differences in their expression of object-placement events (Bowerman, 1996; Narasimhan et al., 2012). These differences become particularly pronounced for placement events involving support and containment relations. In the case of *support relations*, speakers of one set of languages (e.g., German, Polish) encode more-specific distinctions detailing the orientation of placed objects, while speakers of another group of languages (e.g., English, Spanish) use more-general descriptions without any reference to the specific orientation of placed objects (e.g., Bowerman, 1996; Bowerman et al., 2002). Similarly, in the case of *containment relations*, speakers of one set of languages (e.g., German, Spanish) express more-specific distinctions conveying the relative fit of placed objects, while speakers of other languages (e.g., English, Polish) rely on more-general descriptions that do not specify the particular fit of placed objects (see papers in Kopecka & Narasimhan, 2012).

Most of the earlier work focused on descriptions of placement events in first language (L1) production contexts, leaving the expression of placement events in second language (L2) contexts relatively understudied. And the few existing studies, all with adult bilingual speakers learning an L2 that encodes support or containment relations in opposite ways than their L1 (more-specific vs. more-general), provided mixed results in the achievement of target-like L2 patterns in the expression of object placement events in L2 (Cadierno et al., 2016; Gullberg, 2009; Viberg, 1998). In this study, we focused on object placement event descriptions produced by two groups of adult bilingual native Polish speakers, who learned an L2 with similar (e.g., German for support events) or different (e.g., Spanish for containment events) object placement description patterns, comparing them to monolingual German, Polish, and Spanish speakers. We asked whether bilinguals would show the same pattern of similarities and differences in their expression of placement events when speaking an L2 that encodes object placement events in similar or different ways, all in comparison to monolinguals in each of the three languages.

EXPRESSION OF PLACEMENT EVENTS IN FIRST LANGUAGE PRODUCTION CONTEXTS

Object placement is a caused motion event, where an agent causes an object to move to a location under manual control (e.g., *put box on table*; Bowerman, 1996; Bowerman et al., 2004). Earlier research in native L1 production contexts, mostly with adult speakers, examined a broad spectrum of languages from different typological families, and showed systematic cross-linguistic variability in the expression of placement events, particularly with respect to the extent of semantic differentiation in expressing support and containment relations (see papers in Ameika & Levinson, 2007; Kopecka & Narasimhan, 2012). For example, studies examining placement events involving *support* showed that native speakers of languages such as Dutch, German, Polish, and Swedish relied primarily on caused posture verbs (e.g., Dutch “*leggen* = lay” and “*zetten* = set”; German “*legen* = lay” and “*stellen* = set”; Polish “*kłaść* = lay” and “*stawiać* = set”), which specify the final orientation of the placed object with respect to the location (Berthele, 2012; Gullberg, 2009; Kopecka, 2012). In contrast, native speakers of languages such as English, French, and Spanish relied on more-general verbs that do not specify the spatial orientation of the

placed object (e.g., English *put*, French “*mettre* = put,” Spanish “*dejar/poner* = leave/put”; Cifuentes, 1999, 2004; Ibarretxe-Antuñano, 2012; Pauwels, 2000; see also Hickmann, 2007; Hickmann & Hendriks, 2006 for similar patterns in children learning French).

Speakers of languages that encode more-specific support relations also show further subtle differences in expressing placement events. As shown in earlier work, even though Swedish, German, and Polish speakers all used specific posture verbs in expressing support relations, German and Polish speakers typically relied on a two-way distinction between horizontal and vertical placement (i.e., “*legen* = lay” vs. “*stellen* = set” in German, “*kłaść* = lay” vs. “*stawiać* = set” in Polish), while Swedish speakers made a three-way distinction in describing similar events: namely, “*sätta* = set” and “*ställa* = stand” for vertical placement—with the latter being more preferable when the vertical extension of the placed object was particularly pronounced—and “*lägga* = lay” for horizontal placement (Gullberg & Burenhult, 2012; Kutscher & Schulze-Berndt, 2007; Viberg, 2006).

In a related vein, previous studies examining placement events involving *containment* also showed that child and adult native speakers of languages such as German, Hungarian, and Spanish relied on different verbs to specify the relative fit of placed objects (e.g., full vs. partial containment as in Spanish “*meter* = insert” vs. “*poner/dejar* = put/leave,” tight vs. loose fit as in German “*stecken* = stick” vs. “*legen* = lay” and Hungarian “*dug* = stick” vs. “*tesz* = put”; Andics, 2012; Berthele, 2012; Bowerman et al., 2002; Ibarretxe-Antuñano et al., 2014). This pattern was also evident in child language speakers of Korean, who relied on different verbs to convey tight (*kkita* = put tightly together) versus loose containment (*nehta* = put loosely together) at an early age (Bowerman & Choi, 2001; Choi & Bowerman, 1991; also see Bowerman et al., 2002; Narasimhan & Brown, 2009, for similar patterns of early attunement to language-specific support and/or containment expressions in other languages). In contrast, speakers of languages such as English and Polish frequently relied on more-general verbs, which do not specify the containment configuration of the placed objects (e.g., English *put*, Polish *włożyć* “put in”; e.g., Kopecka, 2012).

There are also some languages that allow greater flexibility in the choice of more-general versus more-specific descriptions in the expression of placement events. For example, speakers of Tamil could use either more-general (e.g., “*veyyii* = put”) or more-specific (e.g., “*nikka veyyii* = make stand,” “*paDka veyyii* = make lie”) expressions that specify the orientation of the placed objects in support events (Asher, 1985; cf. Narasimhan & Gullberg, 2006). Similarly, speakers of Tzeltal could rely on more-general (i.e., “*otz-es* = make enter”) or more-specific verbs (e.g., “*tik* = insert into container with small opening,” “*ch'ik koel* = insert into tight-fit relation between parallel supports,” “*suk* = insert stopper into tight-fit, narrow opening”) in expressing containment relations (Brown, 2012).

In summary, studies in L1 production contexts show different clustering of languages in their expression of different types of placement events (support vs. containment) that vary along a continuum from more-general to more-specific.

EXPRESSION OF PLACEMENT EVENTS IN SECOND LANGUAGE PRODUCTION CONTEXTS

The variability in the encoding of placement events might be particularly challenging for bilinguals who are speaking an L2 that shows similar patterns for one (e.g., support) but *not* for the other (e.g., containment) type of placement event. This might, in turn, force

them to redefine their L1 categories when talking about different types of placement events in their L2, thus resulting in unidirectional or bidirectional cross-linguistic influences on L2 productions (e.g., Jarvis & Pavlenko, 2008; Odlin, 2005). Earlier work on cross-linguistic influence in the expression of motion focused largely on voluntary (i.e., self-) motion events. This earlier work—based on Talmy’s (2000) binary distinction between satellite-framed languages (S-language; e.g., English) that express manner in the verb and path outside the verb (*run into the room*) and verb-framed languages (V-language; e.g., Spanish) that express path in the verb and manner (optionally) outside the verb (*entrar en la habitación corriendo* = “enter the room running”; also see Özçalışkan & Emerson, 2016; Özçalışkan et al., 2016a, 2016b; Slobin, 2004 for further details on typology and its effects on adult L1 production)—provided strong evidence for L1 effects on L2 in the expression of voluntary motion when the two languages belonged to opposite language types. Bilingual speakers, when switching from a V-language L1 to an S-language L2 (e.g., Spanish to English) produced fewer manner verbs than S-language L1 speakers—a pattern that was reversed for bilinguals transitioning from an S-language L1 to a V-language L2 (e.g., Brown & Gullberg, 2008; Cadierno, 2010; Özçalışkan & Slobin, 2000). In some instances, the switch from an S-language L1 to a V-language L2 also resulted in errors in the lexicalization of motion, particularly in the expression of path outside the verb (e.g., Spanish L2 speakers using *correr adentro* “run inside” instead of *entrar corriendo* = “enter running”; Larrañaga et al., 2011; Muñoz & Cadierno, 2019). Importantly, however, L1 transfer effects were also mediated by proficiency level and the relative complexity of the event description system, with more target-like L2 productions when produced by advanced bilingual speakers (e.g., Cadierno & Ruiz, 2006; Özçalışkan, 2016) and when transitioning from a more-specific to a more-general system of expression (i.e., from S- to V-language; Lewandowski & Özçalışkan, 2021).

Compared to voluntary motion, relatively less is known about the expression of placement events (i.e., caused motion) in L2 production contexts. The few existing studies on placement events involving *support* relations suggest that it is harder for L2 learners to shift from an L1 with more-general placement descriptions to an L2 with more-specific descriptions. For example, L1 speakers of Finnish and Spanish (both of which use a more-general system for support events) showed difficulties in acquiring L2-like patterns in learning Swedish, which uses a more-specific system (i.e., use of several different posture verbs such as “*sätta* = set,” “*ställa* = stand,” “*lägga* = lay”; Viberg, 1998). As a result, when speaking L2 Swedish, L1 speakers of Finnish and Spanish either avoided using placement verbs altogether or relied on one Swedish placement verb to describe a broader set of scenes (e.g., “*ställa* = stand” for both vertical and horizontal placement) that would have required different verbs in Swedish. Similarly, L1 speakers of English—with more-general encoding of support relations—when describing placement events in L2 Dutch, showed greater reliance on non-placement verbs (e.g., “*gaan* = go” or “*doen* = do”) compared to Dutch native speakers, and overextended the Dutch vertical placement verb “*zetten* = set” to encompass both vertical and horizontal support placement events (Gullberg, 2009; see also Alferink & Gullberg, 2014 for a similar pattern in Dutch-French bilinguals, and Berthele, 2012 in Romansh-German bilinguals).

There is also some evidence that the opposite pattern becomes evident in moving from a more-specific to a more-general system of encoding support relations. For

example, Gullberg (2011) found that L1 speakers of Dutch or German—both with more-specific systems of encoding support relations—showed native-like placement descriptions in their L2 French, which uses a general placement verb for all support events (“*mettre* = put”). On a side note, this pattern was less evident in their cospeech gestures, with learners showing traces of the more specific L1 support distinctions in gesture while speaking L2.

This finding was challenged in more recent work, however, in a study examining bidirectional effects in the expression of placement events involving both *support* and *containment* relations with two groups of Danish-Spanish bilinguals, with either Danish or Spanish as L1 (Cadierno et al., 2016). Irrespective of event type (i.e., support or containment), both Danish (L1)-Spanish (L2) bilinguals, who had to shift from a more-specific to a more-general system, and Danish (L1)-Spanish (L2) bilinguals, who had to make the opposite transition, failed to show the target-like patterns when describing placement events in their L2—be it Danish or Spanish. For example, in moving from a more-general to a more-specific system, Spanish (L1)-Danish (L2) bilinguals, when speaking their L2 Danish, overextended the verb “*lægge* = lay” to convey all the different types of support relations that were coded with different verbs by Danish L1 speakers (i.e., “*lægge* = lay” for horizontal and “*sætte* = set”/“*stille* = set, stand” for vertical placement); they also used placement verbs in a random way when describing different types of containment relations, thus not following the distinction L1 Danish speakers made between “*stikke* = stick” (full containment, tight fit), “*lægge* = lay” (full containment, horizontal), “*putte* = put(in)” (full containment, general), and “*sætte* = set” (partial containment). The difficulties in attaining L2-like patterns were evident when speakers were moving from a more-specific to a more-general system of object placement as well. More specifically, Danish (L1)-Spanish (L2) bilinguals, who encoded more specific support (i.e., horizontal, vertical) and containment distinctions (e.g., partial containment, full containment involving horizontal placement, full containment involving tight fit) in their L1 Danish compared to L1 Spanish speakers, overextended the verb “*poner* = put” to indicate all types of placement in L2 Spanish, thus failing to make the three-way distinction Spanish L1 speakers made between support (“*dejar* = leave”), partial containment (“*poner* = put”), and full containment (“*meter* = insert”).

The difference in the findings of the two sets of studies (Gullberg, 2011 vs. Cadierno et al., 2016) could be an outcome of different research designs. Gullberg (2011) examined speakers of several different languages—all with more-specific systems—speaking an L2 with a more-general system at different proficiency levels; Cadierno et al. (2016), however, focused on the same two languages, examining bidirectional influences among L2 speakers with similar levels of proficiency.

Overall, the relatively few existing studies with bilinguals largely focused on support relations and suggested that the effect of L1 on L2 may be modulated by the directionality of the shift, with the transition from a more-general to a more-specific system posing greater difficulties for L2 learners. The only exception to this is one study (Cadierno et al., 2016, as outlined in the preceding text), which suggests that the specificity of placement encoding might not matter, with similar difficulties encountered in achieving L2-like patterns when shifting from a more-specific to a more-general or from a more-general to a more-specific system.

CURRENT STUDY

Research in L1 production contexts provides evidence for strong cross-linguistic differences in the expression of placement events encoding support or containment relations, with speakers of some languages using more-general and speakers of other languages using more-specific descriptions to express these two types of events (e.g., Bowerman, 1996; Bowerman et al., 2002; also see papers in Kopecka & Narasimhan, 2012).

The few studies that examined the expression of placement events among bilinguals primarily focused on L2 patterns in learning an L2 that requires shifting either from a more-specific to a more-general or from a more-general to a more-specific description system, mostly showing greater difficulties in moving from a more-general to a more-specific encoding system, with the exception of one study. However, there is no existing work on the expression of placement events that involves languages with *similar* systems of placement encoding, leaving this topic in need of further exploration. Furthermore, most of this earlier work focused on support events (e.g., *put book on table*, *put bottle on floor*), while less is known about other types of placement events, such as events involving a containment relation between the placed object and the location (but see Cadierno et al., 2016, for an exception).

In this study, we aimed to fill these gaps by focusing on the expression of placement events involving support and containment relations in two groups of bilingual speakers, that is, Polish speakers of L2 German and Polish speakers of L2 Spanish, as compared to German, Polish, and Spanish L1 speakers. When talking about *support relations*, both German and Polish speakers rely on a more-specific system, differentiating between horizontal and vertical placement; while Spanish speakers rely on a more-general system with no reference to the spatial orientation of the placed object. As such, the two bilingual groups represent two distinct types of L1-to-L2 transitions: Polish (L1)–German (L2) bilinguals transition to an L2 with a similar (i.e., more-specific) system, while Polish (L1)–Spanish (L2) bilinguals have to switch to a different (i.e., more-general) system. In contrast, when talking about *containment relations*, both German and Spanish speakers rely on a more-specific system, encoding the relative fit of the placed object (i.e., full vs. partial containment in Spanish and tight vs. loose fit in German), while Polish speakers rely on a more general system, with no specification of the containment configuration of the placed object. Therefore, for containment events, both Polish (L1)–German (L2) and Polish (L1)–Spanish (L2) bilinguals transition to an L2 with a different (i.e., more-specific) placement categorization system. This combination of languages thus provides an excellent test bed for examining placement event categorization among bilingual populations because it represents—as can be seen in Table 1—the entire range of transition types between L1 and L2, namely: (1) between two similar more-specific

TABLE 1. Types of transitions from L1 to L2 by learner group and event type

Type of transition	Learner group	Event type
More-specific to more-specific	Polish (L1)–German (L2)	Support
More-specific to more-general	Polish (L1)–Spanish (L2)	Support
More-general to more-specific	Polish (L1)–German (L2)	Containment
More-general to more-specific	Polish (L1)–Spanish (L2)	Containment

systems, that is, Polish (L1)–German (L2) for support events, (2) from a more-specific to a more-general system, that is, Polish (L1)–Spanish (L2) for support events, and (3) from a more-general to a more-specific system, that is, both Polish (L1)–German (L2) and Polish (L1)–Spanish (L2) for containment events.

In our study, we addressed two questions: we first asked whether L1 speakers of Polish, German, and Spanish would differ in their expression of placement events encoding support and containment relations in L1 production contexts. In describing *support events*, we predicted that German L1 and Polish L1 speakers would use more-specific descriptions than Spanish L1 speakers, and Spanish L1 speakers would use more-general descriptions than both German L1 and Polish L1 speakers, based on earlier work that showed that German and Polish but *not* Spanish L1 speakers specified the relative orientation of placed objects (e.g., Berthele, 2012; Ibarretxe-Antuñano, 2012; Kopecka, 2012). In describing *containment events*, we predicted that German L1 and Spanish L1 speakers would use more-specific descriptions than Polish L1 speakers, and Polish L1 speakers would use more-general descriptions than German L1 and Spanish L1 speakers, based on earlier research that showed that German and Spanish but *not* Polish L1 speakers specified the relative fit of placed objects (i.e., tight vs. loose fit for German; full vs. partial containment for Spanish; Berthele, 2012; Ibarretxe-Antuñano et al., 2014; Kopecka, 2012).

We next asked whether bilingual speakers' L2 patterns, when switching to an L2 with a similar (i.e., German for support relations) versus a different placement categorization system (i.e., Spanish for support, German and Spanish for containment), would resemble the expression patterns of monolingual speakers of the corresponding L2 languages (German, Spanish), or, alternatively, would continue to adhere to L1 (i.e., Polish) patterns. We predicted that, for *support events*, Polish (L1)–Spanish (L2) bilinguals would follow the patterns of the target L2 language in ways similar to Spanish L1 speakers, with greater use of more-general than more-specific placement descriptions—a prediction based on Gullberg (2011) that showed that speakers shifting from a more-specific L1 to a more general L2 support categorization system showed native-like placement patterns in L2. In a similar vein, we expected Polish L1–German L2 bilinguals to follow the patterns of the target L2 language in their descriptions of support events, with greater use of more-specific than more-general descriptions because their L1 and L2 largely overlap in the conceptualization of support relations (i.e., reliance on a two-way distinction between horizontal and vertical placement; Berthele, 2012; Kopecka, 2012). For events involving *containment*, we expected both Polish (L1)–German (L2) and Polish (L1)–Spanish (L2) bilinguals to show L1 effects on the expression of placement events in L2, with lower use of specific verbs detailing the type of fit in both German L2 and Spanish L2 compared to German and Spanish monolinguals. This prediction was based on the majority of the previous research (Gullberg, 2009; Viberg, 1998, but see Cadierno et al., 2016 for an exception), which showed that speakers shifting from a more-general L1 to a more-specific L2 placement expression system show L1 effects on their descriptions of object placement in L2.

METHODS

SAMPLE

The sample consisted of 40 bilingual adult native Polish speakers, with either German ($n=20$; $M_{age}=20.1$; range = 19–21, 15 females) or Spanish ($n=20$; $M_{age}=21.7$,

range = 21–29, 19 females) as their L2, along with 59 adult monolinguals, speaking either German ($n = 20$; $M_{\text{age}} = 33.2$, range = 19–51, 17 females), Spanish ($n = 19$; $M_{\text{age}} = 38$, range = 22–68, 14 females), or Polish ($n = 20$; $M_{\text{age}} = 35.1$; range = 21–47, 19 females) as their native language.

The bilinguals, who all were college students at a Polish university, were grouped as high intermediate L2 learners of either German or Spanish based on a university language placement test (i.e., level B2 according to the Common European Framework of Reference by the Council of Europe, 2001). Their mean exposure to L2 was $M_{\text{ALL}} = 4.9$, $SD = 3.6$ ($M_{\text{L2 SPANISH}} = 2.9$, $SD = 2.9$; $M_{\text{L2 GERMAN}} = 6.8$, $SD = 3.2$) years prior to university, and $M_{\text{ALL}} = 2$, $SD = 0$ ($M_{\text{L2 SPANISH}} = 2$, $SD = 0$; $M_{\text{L2 GERMAN}} = 2$, $SD = 0$) years at university. None of the bilinguals lived in a country where their L2 was spoken as a native language; most of the monolinguals had some knowledge of one or two other languages (i.e., mostly English), but none of them used these languages in their everyday lives.¹

DATA COLLECTION

Each adult participant completed an animated video description task involving object placement events, which was originally developed by Bowerman et al. (2004; <https://doi.org/10.17617/2.492916>). The scenes depicted different support and containment events. The support events included two events with *vertical support* in which a vertically placed object was supported by a flat surface (e.g., CUP ON TABLE) and three events with *horizontal support*, in which a horizontally placed object was supported by a flat surface (e.g., BOOK ON FLOOR). The containment events consisted of three events with *loose containment*, in which the object was loosely contained within an enclosed space (e.g., PEN IN HOLE) and three events with *tight containment*, in which the object was tightly located inside an enclosed space (e.g., CELERY IN FITTED PAPER BAG). In addition, five of these scenes depicted *full containment* where the object was fully contained in an enclosed space (e.g., PEN IN HOLE), and one depicted *partial containment* where the object was partially contained in an enclosed space (APPLE IN BOWL). The choice of the scenes in our study was based on support and containment dimensions that have been shown to exhibit robust cross-linguistic differences in L1 production, relevant to the target languages in our study. We also included object placement events that were both familiar ($n = 6/11$; e.g., PUT STONE INTO POCKET for containment, PUT CUP ON TABLE for support) and unfamiliar ($n = 5/11$; e.g., PUT HEAD INTO BUCKET for containment, PUT CUP ON TABLE WITH MOUTH for support) to account for potential variability observed in L2 productions due to prototypicality of the event. This was based on earlier work (Ellis et al., 2014) that suggested that prototypical verb meanings tend to be acquired more easily and earlier than non-prototypical ones in L2 acquisition contexts (see Table 2 for a full list of the 11 scenes and Figure 1 for snapshots from sample events depicting support and containment relations). We did not provide participants with labels for the objects; instead, we told them to use more general words (e.g., “object,” “something”) if they did not know or remember the label for any of the particular objects shown in the videos.

Participants’ responses were collected in written form using an online platform, LimeSurvey (<https://www.limesurvey.org/>). Each participant first received an initial written instruction on a computer: “You will watch a series of short video clips; please describe each video clip by answering the question: What is happening in this clip?”),

TABLE 2. List of stimulus events

Object placement scene	Support or containment type
PUT CUP ON TABLE	Vertical support
PUT CUP ON TABLE WITH MOUTH	Vertical support
PUT ARMLOAD OF BOOKS ON TABLE	Horizontal support
PUT BANANA ON TABLE WITH LONG TONGS	Horizontal support
PUT BOOK ON FLOOR	Horizontal support
PUT APPLE IN BOWL	Loose/partial containment
PUT STONE INTO POT	Loose/full containment
PUT PEN IN HOLE	Loose/full containment
PUT HEAD INTO BUCKET	Tight/full containment
PUT CELERY INTO RECORDER CASE	Tight/full containment
PUT STONE INTO POCKET	Tight/full containment

followed by 11 videos, presented one at a time and in randomized order.² The participants completed the task at their own pace, using a key to proceed to the next event. Monolingual participants completed the task in their native language, and bilingual participants completed it only in their L2.

DATA CODING AND ANALYSIS

All participants used a single clause to describe each placement event, which served as the unit of analysis in our study. Participants' written responses were coded into one of two categories, separately for events conveying support and containment relations. More-general descriptions included instances in which the participant described the scene using a general placement verb that did not specify the type of support or containment relation (e.g., Spanish "*poner* = put," Polish "*wkladać* = put in"). More-specific descriptions included instances in which the participant described the event using a verb that specified either the type of support (e.g., German "*legen* = lay," Polish "*kłaść* = lay") or the type of containment (e.g., German "*stecken* = stick," Spanish "*meter* = insert").³ We excluded descriptions with nonplacement verbs (e.g., German "*tunken* = dip," Polish "*schować* = hide," Spanish "*sumergir* = immerse") from all analyses as they did not convey object placement relations⁴ (see Tables 3 and 4 for examples of more-specific and more-general placement event descriptions L1 and L2 speakers produced in the three languages).

We computed the total number of more-general and more-specific descriptions each speaker produced in each language for the 11 scenes. We analyzed differences in the expression of placement events between the three groups of monolinguals (monolingual German, monolingual Polish, monolingual Spanish) using Kruskal–Wallis tests (χ^2), separately for more-general and more-specific descriptions for each event type (support, containment). We analyzed differences in the expression of placement events in bilinguals, separately for the Polish–German bilinguals compared to Polish and German monolinguals, and for the Polish–Spanish bilinguals compared to Polish and Spanish monolinguals. We used Kruskal–Wallis tests, separately for support and containment events. For all post-hoc comparisons, we used the Dunn test for corrections to adjust for multiple comparisons. We analyzed differences in the subtypes of the more-specific

1A. VERTICAL SUPPORT EVENT



1B. HORIZONTAL SUPPORT EVENT



1C. LOOSE-FIT CONTAINMENT EVENT



1D. TIGHT-FIT CONTAINMENT EVENT



FIGURE 1. Snapshots from sample animations involving vertical (1A, PUT CUP ON TABLE) or horizontal (1B, PUT BOOK ON FLOOR) support events and loose-fit (1D, PUT PEN IN HOLE) or tight-fit (1D, PUT CELERY INTO CASE) containment events.

descriptions within the support (horizontal vs. vertical) and containment relations (partial vs. full; tight vs. loose), using the same method of analyses outlined in the preceding text to subsets defined by these events. For event subtypes that involved only two groups, we used Wilcoxon signed test (W) in place of Kruskal–Wallis.⁵

RESULTS

EXPRESSION OF PLACEMENT EVENTS IN FIRST LANGUAGE

We first examined cross-linguistic differences in patterns of placement event descriptions in productions in L1, which included Polish, German, and Spanish. First looking at

TABLE 3. Examples of more-specific and more-general descriptions of placement events conveying support relations produced by monolingual speakers of German, Polish, or Spanish, and bilingual speakers of Polish (L1)–German (L2) or Polish (L1)–Spanish (L2)

General	Specific
<p>German L1 <i>Die Frau hat einen Stapel Bücher auf den Tisch</i> GETAN = The woman PLACED a pile of books on the table</p>	<p>German L1 <i>Die Frau hat ein Buch auf den Boden GELEGT</i> = The woman LAID a book on the floor (horizontal support) <i>Die Frau hat einen Becher auf den Tisch</i> GESTELLT = The woman SET a cup on the table (vertical support)</p>
<p>Polish L1 <i>Pan UMIEŚCIŁ banana na stole</i> = A man PLACED a banana on the table</p>	<p>Polish L1 <i>Pani POŁOŻYŁA książkę na podłodze</i> = The woman LAID a book on the floor (horizontal support) <i>Pani POSTAWIŁA kubek na stole</i> = The woman SET a cup on the table (vertical support)</p>
<p>Spanish L1 <i>La chica DEJA un libro en el suelo</i> = The girl LEAVES a book on the floor <i>La mujer PONE la taza sobre la mesa</i> = The woman PUTS a cup on the table</p>	<p>Spanish L1 NONE OBSERVED</p>
<p>German L2 <i>Die Protagonistin hat viele Bücher auf dem Tisch</i> GELASSEN = The protagonist LEFT many books on the table</p>	<p>German L2 <i>Die Frau hat der Buch auf dem Fußboden GELEGT</i> = The woman LAID a book on the floor (horizontal support) <i>Die Frau hat ein Becher auf dem Schreibtisch</i> GELEGT = The woman LAID a cup on the desk (vertical support)</p>
<p>Spanish L2 <i>La mujer ha PUESTO el libro en el suelo</i> = The woman PUT a book on the floor <i>Una mujer PUSO una copa azul en la mesa</i> = A woman PUT a blue cup on the table</p>	<p>Spanish L2 NONE OBSERVED</p>

support relations, we found an effect of group in the use of more-specific descriptions (Kruskal–Wallis; $\chi^2(2) = 47.46, p < .001, \eta^2_H = 0.81$). As can be seen in Figure 2A, Spanish speakers produced fewer more-specific descriptions than both German and Polish speakers (Dunn, $ps < .001$), while the latter two did not differ from each other ($p = 0.3$).

Next, we examined fine-grained differences in the expression of support events using more-specific verbs. Our analysis showed group differences in the expression of more-specific support descriptions for both horizontal ($\chi^2(2) = 72.43, p < .001, \eta^2_H = 0.94$) and vertical support ($\chi^2(2) = 75.53, p < .001, \eta^2_H = 0.95$). As can be seen in Figure 2B, German and Polish speakers did not differ in their expression of horizontal ($p = 0.53$) or vertical ($p = 0.75$) support, but they both produced greater proportion of more-specific verbs expressing both horizontal ($ps < .001$) and vertical ($ps < .001$) support than Spanish speakers. German speakers relied on the more-specific verbs “stellen = set” and “legen = lay,” while Polish speakers used the more-specific verbs “stawiać = set” and “kłaść = lay”

TABLE 4. Examples of more-specific and more-general descriptions of placement events conveying containment relations produced by monolingual speakers of German, Polish, or Spanish, and bilingual speakers of Polish (L1)–German (L2) or Polish (L1)–Spanish (L2)

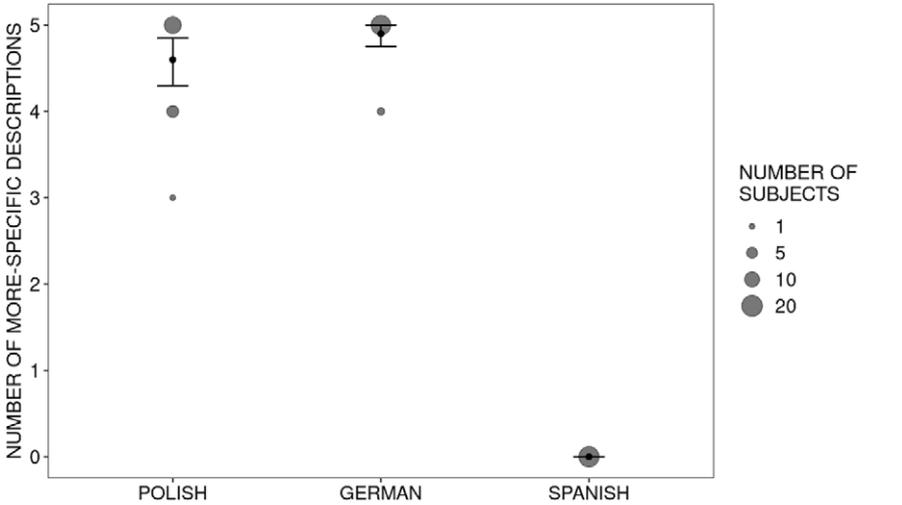
General	Specific
<p>German L1 <i>Die Frau hat einen Ziegel in einen Wassereimer</i> GETAN = The woman PLACED a brick in a bucket of water</p>	<p>German L1 <i>Der Mann hat seinen Kopf in einen Eimer</i> GESTECKT = The man STICKED his head into a bucket (tight fit) <i>Die Frau STECKT einen Stein in ihre Hosentasche =</i> The woman STICKS a stone in her trouser pocket (tight fit)</p>
<p>Polish L1 <i>Pani UMIEŚCIŁA pisak w dziupli =</i> The woman PLACED a marker in the hollow <i>Pani WŁOŻYŁA jabłko do miski =</i> The woman LAID an apple into a bowl</p>	<p>Polish L1 NONE OBSERVED</p>
<p>Spanish L1 <i>Alguien COLOCA una manzana en el frutero de la mesa =</i> Somebody PLACES an apple in the fruit platter on the table</p>	<p>Spanish L1 <i>El hombre INTRODUCE la cabeza en el cubo =</i> The man INSERTS his head in a bucket (full containment) <i>METE un ladrillo en una cazuela con agua =</i> She INTRODUCES a brick in a pot of water (full containment)</p>
<p>German L2 <i>Der Protagonist hat sein Kopf in einem plastiken Behälter HINGELEGT =</i> The protagonist LAID his head in a plastic container <i>Die Frau hat etwas in die Tasche EINGELEGT =</i> The woman LAID something in her pocket</p>	<p>German L2 <i>Der Mann hat den Kopf in den Eimer GESTECKT =</i> The man STICKED his head in a bucket. (tight fit)</p>
<p>Spanish L2 <i>El hombre ha PUESTO la cabeza en el cubo =</i> The man PUT the head in the bucket <i>Alguien ha PUESTO el ladrillo en una olla llena de agua =</i> Somebody PUT a brick in a pot full of water</p>	<p>Spanish L2 <i>La señora ha METIDO una verdura en una bolsa =</i> The woman INSERTED a vegetable in a bag (full containment)</p>

in their descriptions of vertical and horizontal support relations. However, orientation did not play a role in determining verb choice in Spanish: the most frequent verb Spanish speakers produced was “*dejar* = leave in a place,” accounting for 67% of the descriptions, which was followed by “*poner* = put” (18%) and “*colocar* = place” (11%).

Turning next to *containment relations*, we found an effect of group in the use of more-specific descriptions ($\chi^2(2) = 43.8, p < .001, \eta^2_H = 0.75$). As can be seen in Figure 3A, German and Spanish speakers produced greater number of more-specific descriptions than Polish speakers ($ps < .001$).

We next examined fine-grained differences in the expression of containment events using more-specific verbs. Our analysis showed group differences in the expression of more-specific containment relations for partial versus full containment between Polish

2A. SUPPORT (L1)



2B. SUPPORT TYPES (L1)

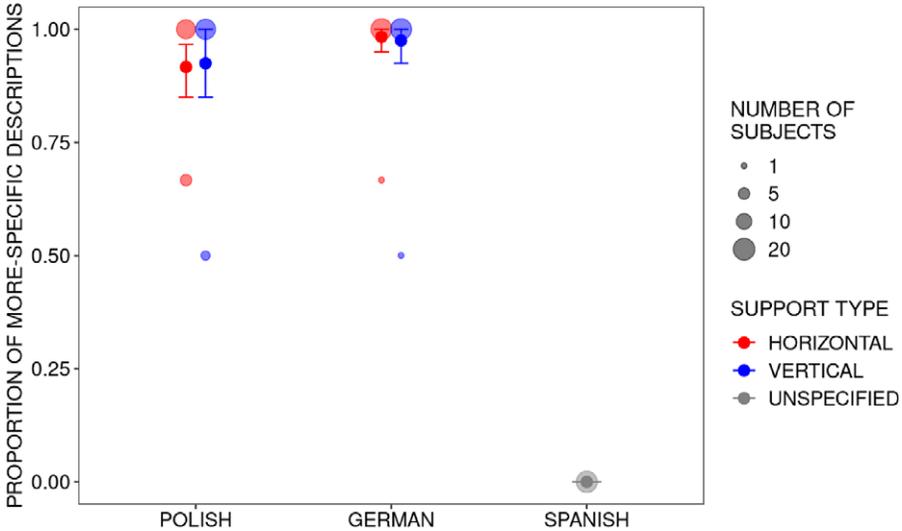
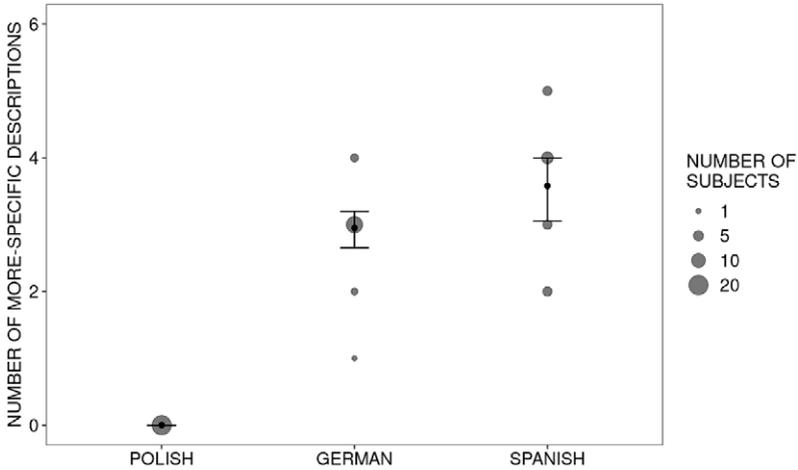


FIGURE 2. Number of more-specific object placement descriptions encoding support relations (2A) and proportion of more-specific object placement descriptions encoding types of support relations (2B) produced by monolingual speakers of Polish, German, or Spanish (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

and Spanish, and loose versus tight containment between Polish and German speakers. As can be seen in Figure 3B, compared to Polish speakers, Spanish speakers used greater proportion of specific verbs expressing full (Wilcoxon-signed test; $W = 0, p < .001, r = 0.92$) but *not* partial ($W = 180, p = 0.33, r = 0.16$) containment; and German speakers used

3A. CONTAINMENT (L1)



3B. CONTAINMENT TYPES (L1)

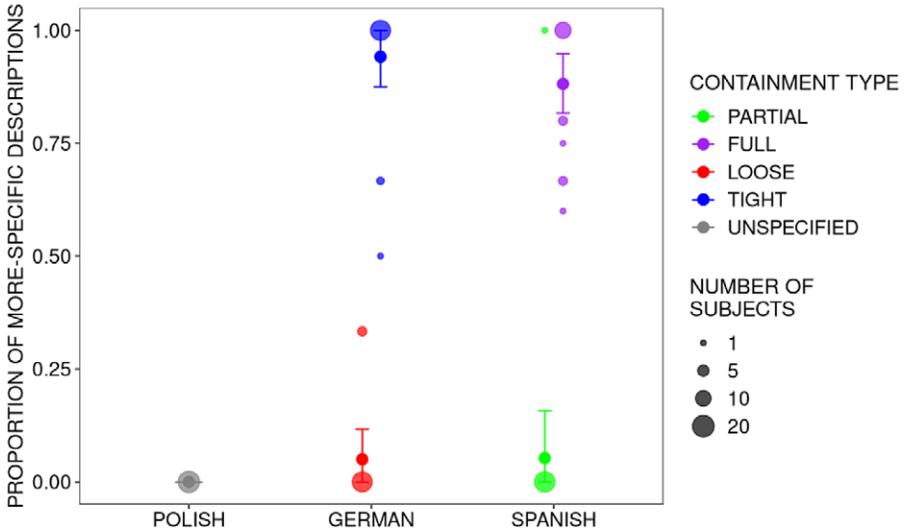


FIGURE 3. Number of more-specific object placement descriptions encoding containment relations (3A) and proportion of more-specific object placement descriptions encoding types of containment relations (3B) produced by monolingual speakers of Polish, German, or Spanish (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

greater proportion of specific verbs expressing tight ($W = 400, p < .001, r = 0.96$), but *not* loose ($W = 230, p = 0.08, r = 0.28$) containment. Spanish speakers primarily used the more-specific verbs “*meter*=insert” and “*introducir*=insert” in their descriptions of full containment relations (71% of full containment descriptions), and the more-general verbs (e.g., “*dejar*=leave,” “*poner*=put,” “*colocar*=place”) in their descriptions of partial

containment relations (95% of partial containment descriptions). However, German speakers used the more-specific verb “*stecken* = stick” when describing tight-fit relations (93% of tight-fit descriptions), and the more-general verbs “*legen* = lay” and “*tun* = put” when expressing loose-fit relations (97% of loose-fit descriptions). Polish speakers, in turn, predominantly relied on the verb “*włożyć* = put in” to describe any type of containment event, which accounted for 71% of their descriptions. The use of “*włożyć* = put in” was followed by the nonplacement verb “*schować* = hide” (13%).

In summary, speakers of Polish L1, German L1, and Spanish L1 showed the expected patterns of similarities and differences in their expression of support and containment relations, with more-specific descriptions of support events in both German and Polish and more-specific descriptions of containment events in Spanish (partial vs. full) and German (tight vs. loose).

EXPRESSION OF PLACEMENT EVENTS IN SECOND LANGUAGE

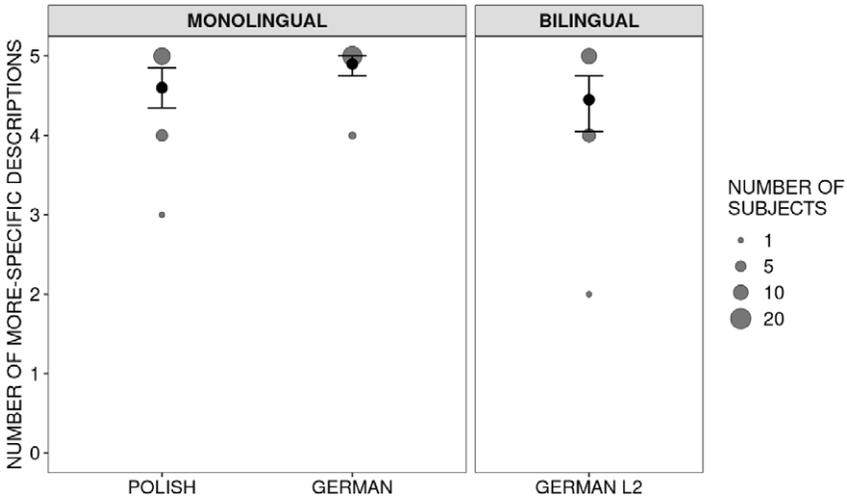
We first analyzed descriptions produced by Polish (L1)–German (L2) bilinguals in comparison to Polish and German monolinguals. First looking at *support relations*—which involved moving from a more-specific L1 to a more-specific L2 system—we found a marginal effect of group in the use of more-specific descriptions ($\chi^2(2) = 6.18$, $p = 0.045$, $\eta^2_H = 0.07$). As can be seen in Figure 4A, speakers in all three groups produced predominantly more-specific descriptions—a pattern that tended to be slightly more pronounced for German L1 speakers compared to Polish L1 and German L2 speakers.

Next, we examined fine-grained differences in the expression of support events, using more-specific verbs. Our analysis showed no group differences in the expression of more-specific support relations for either horizontal ($\chi^2(2) = 5.54$, $p = 0.06$) or vertical ($\chi^2(2) = 1.27$, $p = 0.53$) support, with all three groups almost exclusively using more-specific verbs to express both types of support (see Figure 4B). Consistent with our predictions, Polish (L1)–German (L2) bilinguals followed target L2 patterns in German, with greater reliance (90% of descriptions) on more-specific verbs conveying the final orientation of placed objects (i.e., “*legen* = lay” and “*stellen* = set”). They also occasionally used more-general verbs, such as “*lassen* = leave” and “*situieren* = situate” (10% of descriptions). At the same time, the distribution of placement verbs in German L1 speakers and Polish (L1)–German (L2) bilinguals did not fully coincide. Unlike German L1 speakers, who made a systematic distinction between their use of “*legen* = lay” for horizontal and “*stellen* = set” for vertical support scenes, German L2 speakers sometimes overextended the verb “*legen* = lay” to describe not only horizontal but also vertical support relations.

Next turning to *containment relations*—which involved moving from a more-general to a more-specific system, we found a significant effect of group in the use of more-specific descriptions ($\chi^2(2) = 38.25$, $p < .001$, $\eta^2_H = 0.64$). German L2 speakers differed from both German L1 ($p = 0.048$) and Polish L1 ($p < .001$) speakers. As can be seen in Figure 5A, Polish (L1)–German (L2) bilinguals’ use of more-specific descriptions was higher than that of Polish L1 speakers, but lower than that of German L1 speakers.

Next, we examined fine-grained differences in the expression of containment events using more-specific verbs. Our analysis showed group differences in the expression of more-specific containment relations involving both loose ($\chi^2(2) = 8.85$, $p = 0.01$, $\eta^2_H = 0.12$) and tight fit ($\chi^2(2) = 43.22$, $p < .001$, $\eta^2_H = 0.72$). As can be seen in Figure 5B, Polish

4A. SUPPORT (MORE-SPECIFIC L1 → MORE-SPECIFIC L2)



4B. SUPPORT TYPES (MORE-SPECIFIC L1 → MORE-SPECIFIC L2)

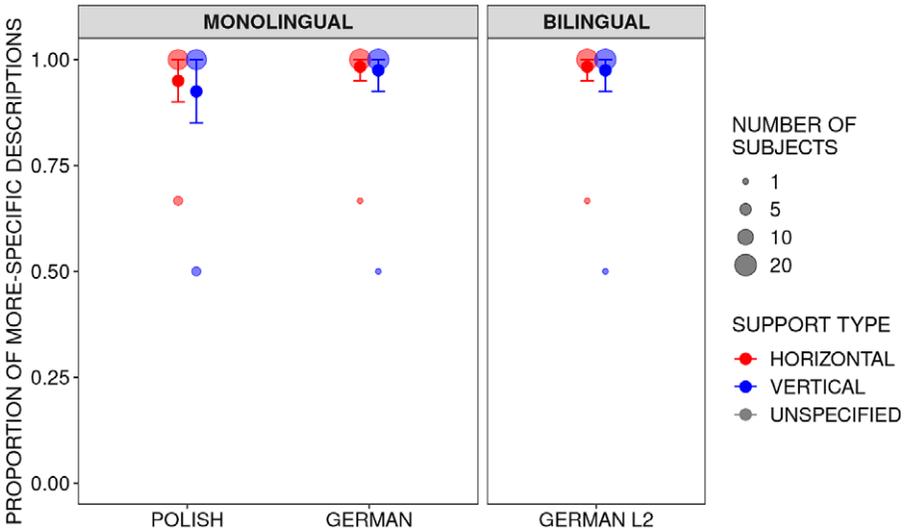
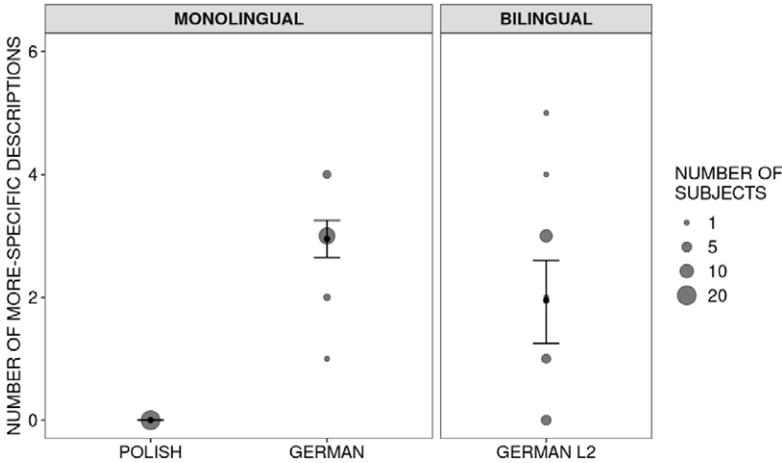


FIGURE 4. Number of more-specific object placement descriptions encoding support relations (4A) and proportion of more-specific object placement descriptions encoding types of support relations (4B) produced by monolingual speakers of Polish, German, and bilingual speakers of Polish (L1)–German (L2) (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

(L1)–German (L2) bilinguals used specific verbs expressing tight containment relations at a greater proportion than Polish L1 speakers ($p < .001$), but at a lower proportion than German L1 speakers ($p < .01$), thus suggesting an effect of L1 on L2. Polish (L1)–German (L2) bilinguals also produced greater number of specific verbs when describing loose

5A. CONTAINMENT (MORE-GENERAL L1 → MORE-SPECIFIC L2)



5B. CONTAINMENT TYPES (MORE-GENERAL L1 → MORE-SPECIFIC L2)

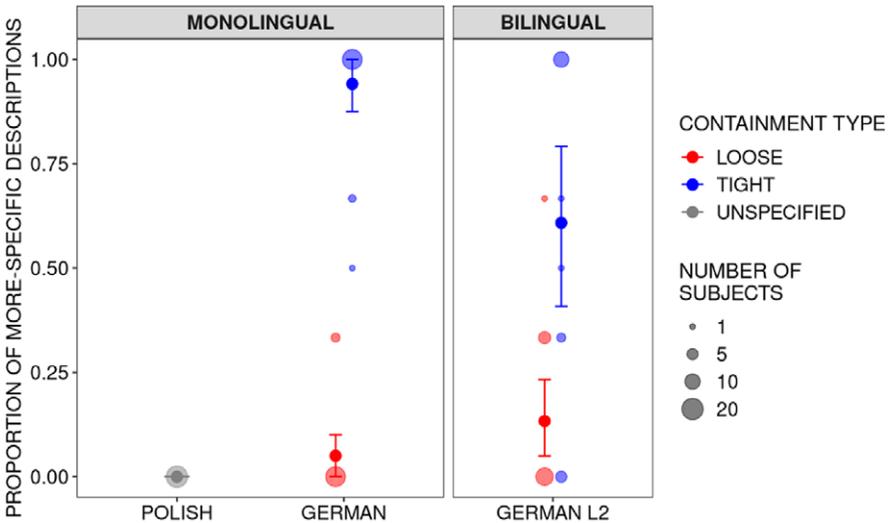


FIGURE 5 Number of more-specific object placement descriptions encoding containment relations (5A) and proportion of more-specific object placement descriptions encoding types of containment relations (5B) produced by monolingual speakers of Polish, German, and bilingual speakers of Polish (L1)–German (L2) (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

containment compared to Polish L1 speakers ($p < .01$), but they did not differ from German L1 speakers ($p = 0.13$). Specifically, when describing tight-fit relations, Polish (L1)–German (L2) bilinguals relied on the more-general verb “*legen* = lay” (49% of descriptions) in addition to the target-like more-specific verb “*stecken* = stick” (47%), resulting in an intermediate pattern situated between German L1 and Polish L1 speakers. In turn, when describing loose-fit relations, Polish (L1)–German (L2) bilinguals

predominantly relied on the more-general verb “*legen*=lay,” along with other more-general verbs such as “*tun*=put,” “*lassen*=leave,” and so forth (86% of loose-fit descriptions), showing adherence to the target-like L2 patterns.

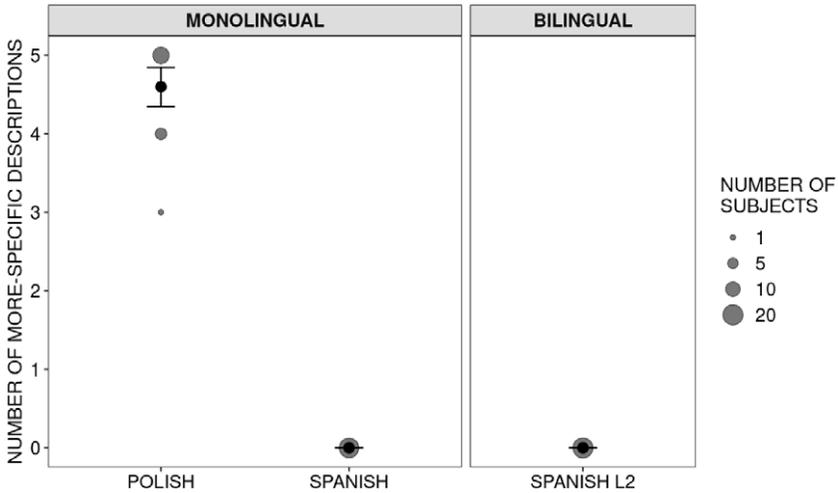
We next analyzed descriptions produced by Polish (L1)–Spanish (L2) bilinguals in comparison to Polish and Spanish monolinguals. First looking at *support relations*—which involved moving from a more-specific L1 to a more-general L2 system, we found an effect of group in the use of more-specific descriptions ($\chi^2(2)=55.74, p < .001, \eta^2_H=0.96$). As can be seen in Figure 6A, Spanish L2 speakers produced significantly fewer more-specific descriptions than Polish L1 speakers ($p < .001$), and they did not differ from Spanish L1 speakers in their production of more-specific descriptions ($p = 1$).

Next, we examined fine-grained differences in the expression of support events using more-specific verbs. Our analysis showed group differences in the expression of more-specific support relations for both horizontal ($\chi^2(2)=96.06, p < .001, \eta^2_H=0.99$) and vertical ($\chi^2(2)=96.36, p < .001, \eta^2_H=0.99$) support. As can be seen in Figure 6B, Spanish L2 speakers produced a significantly lower proportion of more-specific verbs expressing both horizontal ($p < .001$) and vertical ($p < .001$) support relations than Polish L1 speakers, but were similar to Spanish L1 speakers in their relative production of each type of support relation (horizontal: $p = 1$ and vertical: $p = 1$). Specifically, in describing support scenes, both L2 Spanish and L1 Spanish speakers used the more-general verbs “*poner*=put,” “*colocar*=place,” “*dejar*=leave,” along with a few others, while L1 Polish speakers relied on two different types of verbs to express support relations (“*kłaść*=lay” and “*stawiać*=set”). Of interest, however, Spanish L1 speakers and Polish (L1)–Spanish (L2) bilinguals differed with respect to the distribution of more-general placement verbs. That is, Spanish L1 speakers relied mostly on the verb “*dejar*=leave” (67% of support scenes), followed by “*poner*=put” (18%) and “*colocar*=place” (12%). In contrast, the bilingual group showed greater preference for “*poner*=put” (70% of support scenes), followed by “*colocar*=place” (15%), and “*dejar*=leave” (9%) in their L2 Spanish productions.

Next turning to *containment relations*—which involved moving from a more-general to a more-specific system—we found a significant effect of group in the use of more-specific descriptions ($\chi^2(2)=38.2, p < .001, \eta^2_H=0.65$). Spanish L2 speakers differed from both Spanish L1 ($p < .001$) and Polish L1 ($p = 0.011$) speakers. As can be seen in Figure 7A, Polish (L1)–Spanish (L2) bilinguals’ relative production of more-specific descriptions was higher than Polish L1, but lower than Spanish L1 speakers. That is, Polish (L1)–Spanish (L2) bilinguals showed patterns similar to L1, particularly in their greater use of more-general verbs when speaking L2 Spanish.

Next, we examined fine-grained differences in the expression of containment events using more-specific verbs. Our analysis showed group differences in the expression of more-specific containment relations involving full ($\chi^2(2)=39.88, p < .001, \eta^2_H=0.68$), but not partial containment ($\chi^2(2)=5.44, p = 0.066, \eta^2_H=0.06$). As can be seen in Figure 7B, Polish (L1)–Spanish (L2) bilinguals used more-specific verbs expressing full containment relations at a greater proportion than Polish L1 speakers ($p = 0.025$) and at a lower proportion than Spanish L1 speakers ($p < .001$). Specifically, Spanish L1 speakers described majority of full containment scenes (72%) using more-specific verbs, including “*meter*=insert” and “*introducir*=insert,” followed by other more-general verbs such as “*guardar*=put away” (13%), “*poner*=put” (6%), and the nonplacement verb “*esconder*=hide” (5%). However, Polish (L1)–Spanish (L2) bilinguals primarily relied on

6A. SUPPORT (MORE-SPECIFIC L1 → MORE-GENERAL L2)



6B. SUPPORT TYPES (MORE-SPECIFIC L1 → MORE-GENERAL L2)

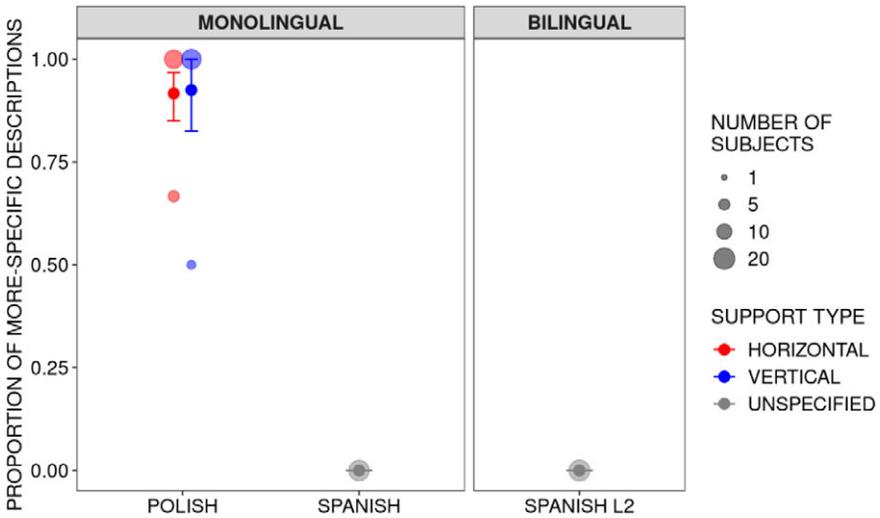
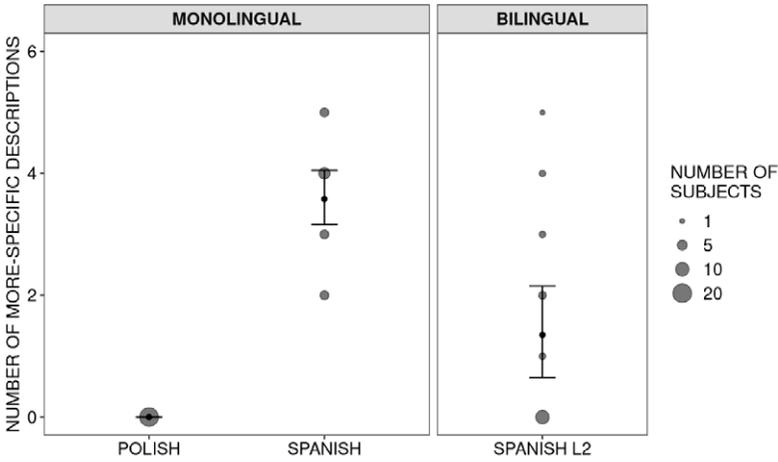


FIGURE 6. Number of more-specific object placement descriptions encoding support relations (6A) and proportion of more-specific object placement descriptions encoding types of support relations (6B) produced by monolingual speakers of Polish, Spanish, and bilingual speakers of Polish (L1)–Spanish (L2) (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

more-general verbs such as “*poner*=put” (54% of the descriptions), followed by “*colocar*=place” (10%), and the nonplacement verb “*esconder*=hide” (9%). They, nonetheless, produced more-general containment verbs at a lower proportion than Polish L1 speakers, resulting in a mixed pattern between their two languages (see sample descriptions by monolingual and bilingual speakers in Table 4).

7A. CONTAINMENT (MORE-GENERAL L1 → MORE-SPECIFIC L2)



7B. CONTAINMENT TYPES (MORE-GENERAL L1 → MORE-SPECIFIC L2)

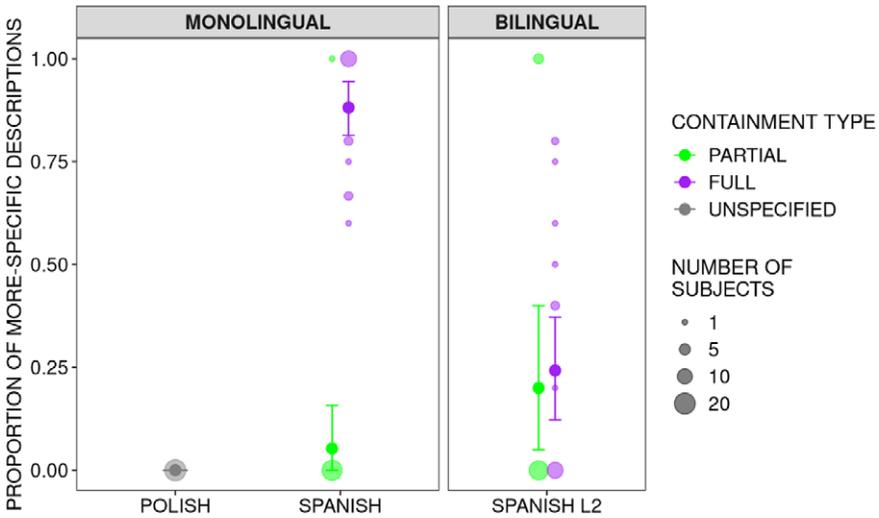


FIGURE 7. Number of more-specific object placement descriptions encoding containment relations (7A) and proportion of more-specific object placement descriptions encoding types of containment relations (7B) produced by monolingual speakers of Polish, Spanish, and bilingual speakers of Polish (L1)–Spanish (L2) (the size of the dot indicates number of subjects; the dot with error bars indicates mean number or proportion; error bars represent standard error).

In summary, bilingual speakers displayed different patterns in their expression of placement events, which were influenced by the transition type between L1 and L2. Bilinguals shifting from a more-specific to a more-general system (i.e., Polish (L1)–Spanish (L2) for support events) and between two similar systems (i.e., Polish (L1)–German (L2) for support events) showed greater attunement to L2 patterns in their relative production of more-specific and more-general placement event descriptions. In contrast,

bilinguals shifting from a more-general to a more-specific system (i.e., Polish (L1)–German (L2) and Polish (L1)–Spanish (L2) for containment events) showed an effect of L1, resulting in a pattern that resembled patterns characteristic of both their L1 and L2 in their expression of placement events.

DISCUSSION

In this study, we asked whether bilingual speakers' expression of placement events in their L2, when transitioning to an L2 with a similar versus a different categorization system, follows the expression of such events produced by native speakers of the L2 (i.e., German or Spanish) or, alternatively, resemble the L1 (i.e., Polish) patterns. Monolinguals displayed the expected patterns of similarities and differences in their expression of support and containment relations, with greater reliance on more-specific descriptions of support events in German and Polish than in Spanish, and more-specific descriptions of containment events in Spanish and German than in Polish. Turning to bilinguals, our analysis showed distinct patterns, depending on the type of shift between L1 and L2—with an effect of L1 in transitioning from a more-general L1 to a more-specific L2 system, and closer alignment to L2 patterns in transitioning to a more-general or a similar more-specific L2 system. For *support relations*, Polish (L1)–Spanish (L2) bilinguals, who were moving from a more-specific L1 to a more-general L2 system, showed greater use of more-general placement descriptions—a pattern akin to monolingual speakers of L1 Spanish. In a similar vein, Polish (L1)–German (L2) bilinguals, who were moving between two similar more-specific systems, adhered to the L2 German patterns, with greater reliance on more-specific placement descriptions. In contrast, for *containment relations*, both Polish (L1)–German (L2) and Polish (L1)–Spanish (L2) bilinguals, who were shifting from a more-general to a more-specific system, showed largely L1 effects resulting in a mixed pattern between L1 and L2 in their expression of placement in L2, with lower use of more-specific verbs and higher use of more-general verbs compared to German and Spanish monolinguals.

SHIFTING FROM A MORE-GENERAL L1 TO A MORE-SPECIFIC L2

Why did bilinguals shifting from a more-general to a more-specific—but *not* from a more-specific to a more-general or between two similar more-specific—systems show L1 effects on L2 productions of object placement? One possible explanation could be the relative complexity associated with more-general versus more-specific system of event descriptions. In describing containment events, both Polish (L1)–Spanish (L2) and Polish (L1)–German (L2) bilinguals were required by their L2 to specify the type of fit, and, consequently, coin a new semantic differentiation that is absent in their L1. In contrast, there was no such demand for support events, which involved either reduction of L1 categories (Spanish L2) or reliance on the same set of distinctions in the L1 and L2 (German L2)—making the L1–L2 transition cognitively less complex. Previous work on placement events involving support relations suggests that the effect of L1 on L2 productions is modulated by the relative complexity of the L1 and L2 patterns, with shifts to more complex systems (i.e., more-specific in our terms) imposing greater difficulties than shifts to less complex (i.e., more-general) systems (Gullberg, 2009,

2011; Viberg, 1998). Our results further confirmed these patterns for support relations in a different set of languages, and also extended them to be true for placement events involving containment relations. These findings also aligned closely with earlier work (e.g., Lewandowski & Özçalışkan, 2021) that examined patterns of voluntary motion expression among L2 speakers (e.g., *running into house*, *crawling over a rug*), who had to shift either from a more complex to a simpler versus from a simpler to a more complex system. This earlier work showed that the transition from more complex to less complex systems of motion expression facilitated closer attunement to the native patterns of the target language in L2 speakers, a pattern that was reversed for the shift in the opposite direction (see also Brown & Gullberg, 2008, 2011; Cadierno, 2004, 2010; Hendriks & Hickmann, 2015; Lewandowski, 2020, among others, for similar findings). These results thus suggest that the complexity of L1 and L2 patterns is a highly influential factor in shaping L1 effects on L2 across different semantic domains, extending the classical model of “hierarchy of difficulty” (Stockwell & Bowen, 1965), which states that L2 categories with more granular dimensions than those found in the L1 are particularly challenging for L2 learners (see also Ellis, 1994; Laufer & Eliasson, 1993; Jarvis & Pavlenko, 2008; Pavlenko, 2014; Sjöholm, 1995, among others, for further discussion on this topic).

One other reason, particularly for the observed mixed pattern in the expression of placement events in L2, could be the bidirectional influences between L1 and L2, which in turn might have resulted in increased convergence in the expression of events in the two languages (e.g., Ameer et al., 2009: semantic convergence; Bullock & Gerfen, 2004: phonological convergence; Sánchez, 2004: morpho-syntactic convergence). One highly relevant piece of evidence for this possibility comes from earlier work examining the expression of support relations by French–Dutch bilinguals residing in Belgium who had comparable proficiency in their two languages. These bilinguals, who acquired both their languages in early childhood, did not differentiate between vertical and horizontal support when speaking Dutch, thus differing from Dutch monolinguals (Alferink & Gullberg, 2014). These findings thus suggest that convergence between L1 and L2 might be an outcome of prolonged language contact—a pattern that differed from the one we observed in our study where participants had more limited language contact between their two languages. As such, the convergence patterns that we observed in our data might be more reflective of the relative difficulty of the transition required moving from L1 to L2 categories of object placement descriptions.

Importantly however, when moving from a more-general to a more-specific system, one notable similarity across the two bilingual groups in our study was that they both overgeneralized one of the placement verbs to cover a broader variety of placement scenes compared to native speakers of the target languages (German, Spanish)—thus simplifying the L2 placement categories. For example, compared to German native speakers who relied on the verb “*stecken* = stick” in their descriptions of tight-fit scenes (i.e., PUT HEAD INTO BUCKET, PUT CELERY INTO RECORDER CASE, PUT STONE INTO POCKET) and the verb “*legen* = lay” in their descriptions of loose-fit scenes (i.e., PUT APPLE IN BOWL, PUT STONE INTO POT, PUT PEN IN HOLE), Polish (L1)–German (L2) bilinguals overused the verb “*legen* = lay” to cover both types of containment when speaking their L2 German, thus simplifying the German L1 patterns. Similarly, in contrast to Spanish native speakers, who relied on the specific verbs “*meter* = insert” and “*introducir* = insert” when encoding full containment (i.e., PUT STONE INTO POT, PUT PEN IN HOLE, PUT HEAD INTO BUCKET, PUT CELERY INTO RECORDER CASE,

PUT STONE INTO POCKET), and on the more general verb “*dejar*=leave” when encoding partial containment (i.e., PUT APPLE IN BOWL), Polish (L1)–Spanish (L2) bilinguals overgeneralized the general placement verb “*poner*=put” to cover all containment scenes—an option that is acceptable in Spanish L1, but did not match the preferences of Spanish L1 speakers (see [Tables C and D](#) in Appendix for speakers’ verb-to-scene choices in German and Spanish L1 vs. L2). This pattern was in line with earlier work that showed similar overgeneralization of one placement verb for multiple scenes in L2, each of which is typically expressed by different verbs in L1 productions (e.g., Cadierno et al., 2016; Gullberg, 2009; Viberg, 1998), and was indicative of the relative difficulty bilingual speakers routinely face in acquiring semantic categories that are irrelevant in their L1 placement system.

Another explanation for the shift toward more-general patterns of expression in L2 (both when moving from more-specific or from more-general L1 systems) might be the underlying learning mechanism involved. As suggested by Filipović and Hawkins (2013) in their Maximize Structurally and Semantically Simple Properties principle, simple categories—akin to more-general verbs in our study—tend to be learned more easily, and hence earlier, than the more-complex ones (i.e., more-specific verbs) as a way of minimizing the learning effort. The preference for the use of placement verbs with more general meaning (i.e., “*poner*=put” as opposed to “*meter*=insert,” “*legen*=lay” as opposed to “*stecken*=stick”) in L2 containment descriptions presented evidence for this possibility.

SHIFTING FROM A MORE-SPECIFIC L1 TO A MORE-GENERAL L2

In contrast, in describing support relations—which involved moving from a more-specific to a more-general system (Spanish L2) or between two more-specific systems (German L2)—both bilingual groups relied on the target L2 patterns in terms of semantic granularity (i.e., more-specific descriptions in German L2 and more-general descriptions in Spanish L2). However, despite this overlap, we also noted some systematic differences between the L1 and L2 speakers. Polish (L1)–German (L2) bilinguals, who were accustomed to the two-way distinction of support relations in their L1 Polish (i.e., horizontal vs. vertical support), overused the horizontal placement verb “*legen*=lay” to cover vertical support in German L2 as well ([Table C](#) in Appendix). A similar overgeneralization in the use of one placement verb to cover both horizontal and vertical scenes when speaking an L2 was also observed in L2 descriptions of support scenes by bilinguals moving from a more-general to a more-specific system in earlier work (see e.g., Cadierno et al., 2016, for Spanish (L1)–Danish (L2) bilinguals and Gullberg, 2009, for English (L1)–Dutch (L2) bilinguals). One explanation—also suggested in previous work (e.g., Gullberg, 2009)—is that bilinguals might look for ways to convey a general placement meaning, typical of their L1 (i.e., transfer-to-nowhere; Kellerman, 1995); but in cases in which L2 offers no neutral placement term, they overextend their use of one more-specific verb in L2 to describe multiple placement events.

SHIFTING FROM A MORE-SPECIFIC L1 TO A MORE-SPECIFIC L2

Our study, however, showed that the semantic extension of placement verbs specifying support relations is a more general phenomenon, as it may occur in bilinguals

who transition between two similar more-specific systems as well. This is a surprising finding as L2 learners were shown to assume semantic equivalence between words in L1 and L2, especially at the initial and intermediate stages of L2 acquisition (e.g., Biskup, 1992; Ringbom 1987, 2001). As such, given that Polish and German have a similar set of distinctions encoding support relations (i.e., horizontal vs. vertical placement), we would have expected Polish (L1)–German (L2) bilinguals to assign the target-like meanings when speaking their L2 German, and also use “*stellen*=set” and “*legen*=lay” selectively to describe the two types of object placement. Instead, we observed an overextension of “*legen*=lay” in the descriptions of both horizontal and vertical support relations in L2 German. What might explain this phenomenon? One possibility could be the process of *simplification* (Meisel, 1980; see also Jarvis & Odlin, 2000), namely that L2 learners might omit obligatory distinctions (e.g., the position of the placed object) to simplify the demands of speaking an L2, even if those distinctions are also obligatory in their L1.

There is, in fact, evidence suggesting that a similar process might be also evident in L1 language development contexts. At the earlier ages, typically when children do not yet have the words to express more nuanced distinctions in their native language, they revert to *overgeneralization*, using the words they know to express a broader set of concepts—thus resembling a pattern that is observed in low or intermediate adult L2 learners in learning similar object placement verbs (cf. Hyltenstam, 1977; Ortega, 2009). For example, an earlier study (Narasimhan & Gullberg, 2011) showed that Dutch children tended to overextend the verb “*leggen*=lay” to talk about events that required the use of “*leggen*=lay” as well as “*zetten*=set” in their L1. These findings thus suggest that mastery of adultlike distinctions in encoding object placement in L1 (and L2, as in our study) might be preceded by a process of overextension of a single placement verb. As such, future studies that examine parallels in the acquisition of more-specific object placement descriptions in L1 and L2 learning contexts can shed further light on simplification as a possible explanation for the patterns of L2 expression in transitioning between two similar more-specific systems.

In a related vein, Polish (L1)–Spanish (L2) bilinguals did not fully overlap with Spanish native speakers in their verb choice pattern, with the latter group showing strong preference for “*dejar*=leave,” and the former group largely relying on “*poner*=put”; see Table D in Appendix. Given that “*poner*=put” was also the preferred verb choice in the bilinguals’ descriptions of containment scenes, a plausible explanation for this pattern could be the play-it-safe strategy. That is, speakers show a preference for a general verb with a multipurpose meaning over verbs with more specific meanings as a strategy to avoid the choice of potentially difficult-to-encode lexical items in the L2 (Hulstijn & Marchena, 1989; see also Berthele, 2012 for a similar pattern in German-Romansh bilinguals).

In contrast to earlier work, which utilized oral elicitation methods, our study used written elicitation of placement event descriptions. One possible effect of written elicitation could be that it allowed participants to revise their responses, thus resulting in greater lexical precision and higher adherence to the target language patterns—particularly for productions in L2. In fact, earlier work (e.g., Ellis & Yuan, 2005; Vasylets et al., 2017) showed that bilinguals exhibited greater semantic complexity in their L2

productions when assessed with a written as opposed to an oral task. In contrast to this earlier work, however, we found no evidence for such beneficial effects. Written productions in L1 in our study showed the same pattern of similarities and differences between languages in the description of support and containment relations compared to earlier work utilizing oral elicitation techniques (German: Berthele, 2012; Spanish: Cadierno et al., 2016; Polish: Kopecka, 2012). Bilinguals' written productions did not show any additional benefits of mode of elicitation either: both bilingual groups had difficulty expressing the semantic distinctions in L2, especially when shifting from a more-general to a more-specific system. The close alignment between patterns of expression elicited using oral versus written format might suggest that language-specific placement categories constitute highly engrained mental representations, the expression of which remains constant independent of mode of production.

One limitation of our study was that it compared L2 expression patterns to those of monolingual speakers of the L1 and L2. However, recent work showed that L2 to L1 influence also occurs across a variety of domains (Brown & Gullberg, 2011; Pavlenko & Jarvis, 2002)—a possibility that can be examined in future studies comparing bilinguals' expression of placement events in both their L1 and L2. Another limitation of our study was its focus on high intermediate L2 learners, but not advanced speakers. There is evidence from earlier work (e.g., Cadierno & Ruiz, 2006; Özçalışkan, 2016) to suggest that the expression of spatial language in L2 may be modulated by L2 proficiency—with more L2-like patterns in advanced bilingual speakers. As such, future work that examines L2 placement descriptions from a developmental perspective with learners at different L2 proficiency levels could shed further light on this issue. Our study also relied on a relatively modest number of scenes within each placement dimension (i.e., containment, support), as these scenes were selected based on the types of contrasts we were interested in (i.e., horizontal vs. vertical support, tight vs. loose fit, full vs. partial containment) and were similar to the ones used in earlier work (Berthele, 2012; Ibarretxe-Antuñano, 2012; Kopecka, 2012). Regardless, the number and variety of experimental items provided us with enough power to detect reliable differences between L1 versus L2 placement descriptions. However, future work could benefit from the inclusion of a broader set of stimuli that could extend our findings to a greater variety of scene types, and further refine our understanding regarding the effect of specificity in event expression in L1 on L2 placement expression patterns.

Taken together, our results showed that cross-linguistic differences in the expression of object-placement events become particularly salient for support and containment relations in both L1 and L2 production contexts. In L1 contexts, we observed strong differences in the lexicalization of placement events, with speakers of one group of languages providing more-general and speakers of other group of languages providing more-specific placement descriptions. Bilingual speakers also showed different patterns of placement expression in their L2; and these distinct patterns were strongly influenced by the type of transition between L1 and L2, with shifts to more-specific systems posing greater difficulties and shifts to more-general or similar more-specific systems posing fewer difficulties and resulting in closer attunement to the target-like L2 patterns. In short, our findings highlight the importance of the relative complexity of event expression in L1 and L2 as an important factor in attaining target-like patterns in speakers' event descriptions in L2.

NOTES

¹Our use of the term “bilingual” was based on a broader notion of bilingualism, which suggests that adult language learners should be viewed as “bilinguals in the making” and foreign language learning as an early stage of bilingualism (e.g., De Houwer & Ortega, 2019, p. 11).

²We used a more general instruction than originally specified in the *Field Manual for the Put Project* (Bowerman et al., 2004) with the goal to elicit more spontaneous descriptions. The exact wording of our instructions in each of the three languages was: “*Sie sehen eine Reihe von kurzen Videoausschnitten. Bitte beschreiben Sie jeden Ausschnitt, indem Sie die folgende Frage beantworten: Was passiert in diesem Ausschnitt?*” (German); “*Obejrzy Pan/i szereg filmików. Proszę opisać każdy z nich, odpowiadając na pytanie: Co się dzieje na filmiku?*” (Polish); and “*Va a ver una serie de videos. Por favor, descríbalos, respondiendo a la pregunta: ¿Qué está pasando en el video?*” (Spanish). The modification of the instruction did not have any detectable effects on the type of responses we elicited, with nearly all responses involving object placement descriptions.

³The criterion we used in our study in defining a verb meaning as being more-general vs. more-specific was based on a verb’s scope of use. According to this principle, we can determine that a particular verb (e.g., “*meter* = insert”; “*stellen* = set”) is specific based on its extent of use as being limited to the very specific context of containment or support relation, thus suggesting that this notion (i.e., type of containment/support) is an inherent aspect of its lexical semantics (cf. Levin, 1993).

⁴Object placement descriptions with nonplacement verbs were relatively infrequent in both L1 (6 instances, 2.7%, in L1 German; 29 instances, 13.3%, in L1 Polish; 8 instances, 3.8 %, in L1 Spanish) and L2 productions (17 instances, 7.8 %, in L2 German; 11 instances, 5%, in L2 Spanish). The nonplacement verbs included “*tunken* = dip,” “*verstecken* = hide” in L1 German; “*rzucać* = throw,” “*schować* = hide,” “*spakować* = pack,” “*zanurzyć* = dip” in L1 Polish; “*apoyar* = lean,” “*esconder* = hide,” “*sumergir* = immerse” in L1 Spanish; “*benutzen* = use,” “*bringen* = bring,” “*geben* = give,” “*hinzufügen* = add,” “*machen* = do,” “*packen* = pack,” “*putzen* = clean,” “*tragen* = carry,” “*verstecken* = hide,” “*werfen* = throw” in L2 German; “*coger* = take,” “*esconder* = hide,” “*tener* = have” in L2 Spanish.

⁵In each comparison, the analysis of the more-general descriptions was an inverse of the analysis of the more-specific descriptions, thus resulting in the same statistical values; we therefore reported statistical values only for more-specific descriptions to avoid repetition.

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APPENDIX

TABLE A. Mean number of more-specific and more-general descriptions of placement events conveying support or containment relations produced by monolingual speakers of German, Polish or Spanish, and bilingual speakers of Polish(L1)–German (L2) or Polish (L1)–Spanish (L2)

	Support		Containment	
	<i>General</i>	<i>Specific</i>	<i>General</i>	<i>Specific</i>
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
German L1	0.1 (0.31)	4.9 (0.31)	2.6 (1.2)	2.9 (0.69)
Polish L1	0.3 (0.48)	4.7 (0.47)	4.4 (1.43)	0 (0.00)
Spanish L1	4.89 (0.46)	0 (0.00)	2.05 (0.71)	3.8 (0.85)
German L2	0.3 (0.95)	4.4 (0.97)	3.5 (1.67)	1.8 (1.42)
Spanish L2	4.8 (0.37)	0 (0.00)	4.05 (1.61)	1.4 (1.85)

TABLE B. Type and token frequencies of more-general and more-specific verbs used by monolingual speakers of German, Polish or Spanish, and bilingual speakers of Polish (L1)–German (L2) or Polish (L1)–Spanish (L2) in their descriptions of placement events conveying support and containment

Support events		Frequency of use	
General	Frequency of use	Specific	Frequency of use
German L1		German L1	
<i>tun</i> = put	1	<i>legen</i> = lay	57
<i>platzieren</i> = place	1	<i>setzen</i> = sit	1
		<i>stellen</i> = set	40
Polish L1		Polish L1	
<i>umieścić</i> = place	5	<i>kłaść</i> = lay	60
		<i>stawiać</i> = set	35
Spanish L1		Spanish L1	
<i>colocar</i> = place	11	NONE OBSERVED	
<i>dejar</i> = leave	64		
<i>depositar</i> = put down	1		
<i>poner</i> = put	17		
German L2		German L2	
<i>lassen</i> = leave	2	<i>legen</i> = lay	68
<i>situieren</i> = place	1	<i>stellen</i> = set	22
Spanish L2		Spanish L2	
<i>colocar</i> = place	15	NONE OBSERVED	
<i>dejar</i> = leave	9		
<i>meter</i> = insert	4		
<i>poner</i> = put	70		
Containment events		Frequency of use	
General	Frequency of use	Specific	Frequency of use
German L1		German L1	
<i>legen</i> = lay	51	<i>stecken</i> = stick	58
<i>tun</i> = put	5		
Polish L1		Polish L1	
<i>umieścić</i> = place	5	NONE OBSERVED	
<i>włożyć</i> = put in	84		
Spanish L1		Spanish L1	
<i>colocar</i> = place	3	<i>introducir</i> = insert	11
<i>dejar</i> = leave	15	<i>meter</i> = introduce	58
<i>guardar</i> = put away	12		
<i>poner</i> = put	9		
German L2		German L2	
<i>lassen</i> = leave	1	<i>stecken</i> = stick	36
<i>legen</i> = lay	56		
<i>situieren</i> = place	1		
<i>stellen</i> = set	6		
<i>tun</i> = put	7		
Spanish L2		Spanish L2	
<i>colocar</i> = place	11	<i>meter</i> = insert	30
<i>dejar</i> = leave	2		
<i>poner</i> = put	68		

TABLE C. The production of verbs by German L1 and German L2 speakers, by scene

Scene	German L1	German L2
PUT PLASTIC CUP ON TABLE WITH MOUTH	stellen = set (n = 19)*, <i>platzieren</i> = place (n = 1)	stellen = set (9), <i>legen</i> = lay (8), <i>situieren</i> = place (1)
PUT CUP ON TABLE	stellen = set (19), <i>setzen</i> = set (1)	<i>legen</i> = lay (12), stellen = set (8)
PUT ARMLOAD OF BOOKS ON TABLE	legen = lay (17), stellen = set (2), <i>tun</i> = put (1)	legen = lay (11), stellen = set (4), <i>lassen</i> = leave (2)
PUT BANANA ON TABLE WITH LONG TONGS	legen = lay (20)	legen = lay (18)
PUT BOOK ON FLOOR	legen = lay (20)	legen = lay (19), <i>stellen</i> = set (1)
PUT APPLE IN BOWL	legen = lay (19), tun = put (1)	legen = lay (11), <i>stellen</i> = set (4), tun = put (2), <i>stecken</i> = stick (1), <i>lassen</i> = leave (1)
PUT STONE INTO POT OF WATER	legen = lay (19), tun = put (1)	legen = lay (13), <i>stellen</i> = set (2), tun = put (2), <i>situieren</i> = place (1)
PUT PEN IN HOLE	legen = lay (13), stecken = stick (2)	legen = lay (9), stecken = stick (7), <i>tun</i> = put (3)
PUT STONE INTO POCKET	stecken = stick (18), <i>tun</i> = put (2)	stecken = stick (11), <i>legen</i> = lay (7)
PUT HEAD INTO BUCKET	stecken = stick (19)	stecken = stick (12), <i>legen</i> = lay (7)
PUT CELERY INTO RECORDER CASE	stecken = stick (19), <i>tun</i> = put (1)	<i>legen</i> = lay (9), stecken = stick (5)

Note: Numbers in parentheses indicate frequency of use; the verbs used by both groups are bolded.

TABLE D. The production of verbs by Spanish L1 and Spanish L2 speakers, by scene

Scene	Spanish L1	Spanish L2
PUT PLASTIC CUP ON TABLE WITH MOUTH	<i>dejar</i> = leave (n = 10)*, poner = put (4), colocar = place (4), <i>depositar</i> = put down (1)	poner = put (13), colocar = place (5), <i>meter</i> = insert (1)
PUT CUP ON TABLE	dejar = leave (13), poner = put (5)	poner = put (17), <i>colocar</i> = place (2), dejar = leave (1)
PUT ARMLOAD OF BOOKS ON TABLE	dejar = leave (17), poner = put (1), <i>colocar</i> = place (1)	poner = put (15), dejar = leave (4), <i>meter</i> = insert (1)
PUT BANANA ON TABLE WITH LONG TONGS	dejar = leave (11), poner = put (4), colocar = place (4)	poner = put (12), colocar = place (4), <i>meter</i> = insert (2), dejar = leave (1)
PUT BOOK ON FLOOR	dejar = leave (13), poner = put (3), colocar = place (2)	poner = put (13), colocar = place (4), dejar = leave (3)
PUT APPLE IN BOWL	dejar = leave (13), poner = put (3), colocar = place (2), <i>introducir</i> = insert (1)	poner = put (13), <i>meter</i> = insert (4), dejar = leave (2), colocar = place (1)
PUT STONE INTO POT OF WATER	meter = insert (10), poner = put (5), <i>introducir</i> = insert (1), colocar = place (1), <i>dejar</i> = leave (1)	poner = put (12), meter = insert (6), colocar = place (2)
PUT PEN IN HOLE	meter = insert (9), <i>introducir</i> = insert (3), <i>dejar</i> = leave (1), <i>guardar</i> = put away (1)	meter = insert (8), <i>poner</i> = put (6), <i>colocar</i> = place (4)
PUT STONE INTO POCKET	meter = insert (10), <i>guardar</i> = put away (9)	<i>poner</i> = put (7), <i>esconder</i> = hide (7), meter = insert (4), <i>colocar</i> = place (2)
PUT HEAD INTO BUCKET	meter = insert (17), <i>introducir</i> = insert (2)	<i>poner</i> = put (14), meter = insert (5)
PUT CELERY INTO RECORDER CASE	meter = insert (12), <i>introducir</i> = insert (4), <i>guardar</i> = put away (2), poner = put (1)	poner = put (15), meter = insert (3), <i>colocar</i> = place (2)

Note: Numbers in parentheses indicate frequency of use; the verbs used by both groups are bolded.