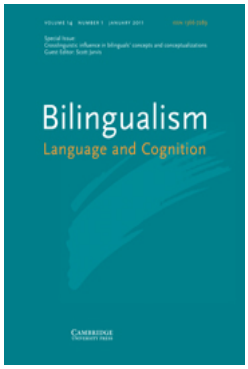
Bilingualism: Language and Cognition

http://journals.cambridge.org/BIL

Additional services for ***Bilingualism: Language and Cognition:***

Email alerts: Click here
Subscriptions: Click here
Commercial reprints: Click here
Terms of use : Click here



Event conceptualization by early Dutch–German bilinguals: Insights from linguistic and eye-tracking data

MONIQUE FLECKEN

Bilingualism: Language and Cognition / Volume 14 / Special Issue 01 / January 2011, pp 61 - 77
DOI: 10.1017/S1366728910000027, Published online: 23 September 2010

Link to this article: http://journals.cambridge.org/abstract_S1366728910000027

How to cite this article:
MONIQUE FLECKEN (2011). Event conceptualization by early Dutch–German bilinguals: Insights from linguistic and eye-tracking data. Bilingualism: Language and Cognition, 14, pp 61-77 doi:10.1017/S1366728910000027

Request Permissions : Click here

CAMBRIDGE JOURNALS

Downloaded from http://journals.cambridge.org/BIL, IP address: 192.87.79.51 on 18 Sep 2014

Bilingualism: Language and Cognition 14 (1), 2011, 61–77 © Cambridge University Press 2010 doi:10.1017/S1366728910000027

Event conceptualization by early Dutch–German bilinguals: Insights from linguistic and eye-tracking data*

MONIQUE FLECKEN
University of Heidelberg, Germany

(Received: December 27, 2008; final revision received: September 30, 2009; accepted: October 6, 2009; First published online 23 September 2010)

This experimental study investigates event construal by early Dutch–German bilinguals, as reflected in their oral depiction of everyday events shown in video clips. The starting point is the finding that the expression of an aspectual perspective (progressive aspect), and its consequences for event construal, is dependent on the extent to which means are grammaticalized, as in English (e.g., progressive aspect) or not, as in German (von Stutterheim & Carroll, 2006). The present study shows that although speakers of Dutch and German have comparable means to mark this aspectual concept, at a first glance at least, they differ markedly both in the contexts as well as in the extent to which this aspectual perspective is selected, being highly frequent in specific contexts in Dutch, but not in German. The present experimental study investigates factors that lead to the use of progressive aspect by early bilinguals, using video clips (with different types of events varied along specific dimensions on a systematic basis). The study includes recordings of eye movements, and examines how far an aspectual perspective drives allocation of attention during information intake while viewing the stimulus material, both for and while speaking. Although the bilinguals have acquired the means to express progressive aspect in Dutch, their use shows a pattern that differs from monolingual Dutch speakers. Interestingly, these differences are reflected in different patterns in the direction of attention (eye movements) when verbalizing information on events.

Keywords: language-specificity, language production, eye tracking, progressive aspect, bilingual-specific patterns

1. Background: language-specificity in the construal of events

In recent years, researchers in the field of psycho linguistics have looked at how speakers organize content for linguistic expression when talking about events. The present analysis is carried out in the context of studies that investigate the role of grammaticalized means in guiding spatial representation as well as event representation and whether patterns of event construal are specific to native speakers of certain languages, given the way concepts are encoded (cf. Carroll & von Stutterheim, 1993; Carroll & von Stutterheim, to appear; Carroll, von Stutterheim & Nüse, 2004; Slobin, 1996 (the Thinking for Speaking hypothesis); von Stutterheim & Nüse, 2003; von Stutterheim, Nüse & Murcia Serra, 2002; Talmy 1988).

It was found that concepts that have paved their way into the grammar of a language play a significant role in establishing language-specific preferences in the segmentation, selection and structuring of information for event construal (cf. von Stutterheim & Nüse, 2003). This process is referred to here as conceptualization, in line with Levelt (1989). Cross-linguistic comparisons were carried out on the basis of the following question: Are grammaticalized means of expression prominent for speakers of a given language in that they will implement the associated concepts in specific contexts (when talking about events, for example) systematically and frequently? Specifically, are they prominent in the sense that the more grammaticalized, the more automatized access to that concept will be in the process of conceptualization (Carroll et al., 2004; Schmiedtová, von Stutterheim & Carroll, in press)? For example, when conceptualizing motion events (as shown in a cross-linguistic study using video clips), speakers of English as well as Standard Arabic – languages with a highly grammaticalized progressive/imperfective marker – tend to segment the event into phases (the inceptive, intermediate or terminative phase, e.g., *he is walking along the road*; *he is heading for the train station*), depending on the phase that is represented in the video clip, and which, in that sense, is "ongoing" at the time

* Research reported on in this article was funded by the German Science Foundation (DFG), through grant STU 131/6-1 to Christiane von Stutterheim (University of Heidelberg). I would like to thank the DFG, as well as Mary Carroll, Christiane von Stutterheim, Barbara Schmiedtová, Pieter Muysken, Scott Jarvis and three anonymous reviewers for helpful comments on earlier versions of this article.

Address for correspondence:
Seminar für Deutsch als Fremdsprachenphilologie, University of Heidelberg, Plöck 55, Office 127b, 69117 Heidelberg, Germany
flecken@idf.uni-heidelberg.de

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

of speech. Motion event descriptions by speakers of German – a language without grammaticalized aspectual markers – show that speakers follow a different pattern and represent events in holistic terms (e.g., *er läuft zum Bahnhof* 'he walks to the train station') (von Stutterheim & Carroll, 2006). It is hypothesized that systematic differences of this kind (phasal segmentation versus holistic representation of an event) are linked to the role of grammaticalized aspectual concepts.

The relevance of these concepts for event conceptualization is supported by differences in patterns of attention allocation by speakers of English and German, as measured by the tracking of eye movements during the speech planning phase (von Stutterheim & Carroll, 2006). Eye movements before and while speaking are considered to reflect speech planning processes (see, e.g., Bock & Griffin, 2001; Griffin, 2004; Levelt, Roelofs & Meyer, 2002) and it is assumed that eye movements during event conceptualization provide a window on underlying event representations, which are linked to linguistic means (Papafragou, Hulbert & Trueswell, 2008). The findings show that grammaticalized and frequently used aspectual structures in a language focus the attention of its native speakers to relevant features of events (von Stutterheim & Carroll, 2006). In the example provided above, speakers of German, who present motion events holistically, tend to also allocate more attention to a possible endpoint of a motion event, although the sections focused in the clip show the intermediate phase of the event (*travelling along a road*). Speakers of languages that use progressive or imperfective aspectual constructions (e.g., speakers of Russian, Arabic, Spanish, English) tend to focus on the phase shown, and are less likely to look for and mention a possible endpoint. In other words, they do not direct attention to the relevant area (possible endpoint) in the clips to the same extent as the German speakers (von Stutterheim & Carroll, 2006). Papafragou et al. (2008), looking at the manner versus path verb typology (Talmy, 1985) and its implications for attention allocation when describing motion events, support the idea that there are early language-specific effects on attention distribution due to cross-linguistic differences given with verb-framed versus satellite-framed languages (cf. Talmy, 1985).

As mentioned above, speakers of Dutch and German have comparable means to mark progressive aspect but differ markedly in the extent to which this aspectual perspective is selected, being highly frequent in Dutch, but not in German. The present experimental study investigates factors that lead to the use of progressive aspect by early bilinguals, using video clips showing different types of situations that have been varied on a systematic basis. The focus is placed on event construal, and eye movement is measured both before and while speakers are verbalizing the dynamic live-action video clips. This approach provides a window on the conceptualization processes that take place during the organization and selection of content for expression. The novelty of the current article is the investigation of the role of grammatical concepts in event construal and the interrelation between attention allocation and event construal patterns in bilingual speakers. The next section will look at previous studies on event conceptualization and L2 users/bilinguals.

1.1 Background: event conceptualization by advanced L2 users and early bilinguals

Many studies on L2 users address the question of whether a speaker who has formally acquired the L2 linguistic system also fully acquires the associated conceptualization patterns that are typical for native speakers of the second language, in both verbal and non-verbal tasks. Pavlenko (2005) and Jarvis and Pavlenko (2008) provide an overview of a number of possible outcomes for L2 and bilingual performance: the co-existence of L1 and L2 conceptualization preferences, L1-based conceptual transfer, the internalization of new conceptual distinctions, the restructuring of conceptual organization, the convergence of L1 and L2 conceptualization preferences, a shift from L1 to L2 conceptualization preferences, or L1 conceptual attrition. The question is which of these possible outcomes apply to event conceptualization preferences and the role of aspect in bilingual speakers, as investigated in the present study, or whether there are other options. The sections below will discuss the outcomes of previous studies looking at event construal in L2 or bilingual speakers.

Several studies looking at the impact of frequently used aspectual notions on event construal (Carroll & Lambert, 2003; van Ierland, 2009; Schmiedtová & Sahonenko, 2008; von Stutterheim & Carroll, 2006; von Stutterheim & Lambert, 2005) show that very advanced L2 users have not fully acquired the subtle but systematic implications of aspectual forms for information organization. Although these speakers have a high level of proficiency, their patterns of event construal follow a specific but not target-like pattern. For example, German as well as French learners of English, when constructing a narrative, mainly use the progressive *-ing* to stress the duration of a situation, but they do not acquire the global planning principles and the perspective associated with use of the form: L1 English narratives centre around a deictic point of reference and speakers relate to 'what is now the case' for each scene when re-narrating a short silent film. L1 German narratives, on the other hand, show a holistic perspective and centre around the notion of temporal shift. The German learners of English use the progressive marker but still re-narrate a large number of bounded events (cf. Carroll & Lambert, 2006; von Stutterheim & Lambert, 2005). The outcome of the above studies can

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

be labelled (partial) L1 based conceptualization transfer, resulting in a "mixed" system with its own (non-target-like) logic.

Studies of other domains show that it is possible for L2 users to fully adapt their conceptual organization to the concepts encoded by the L2 (e.g., Athanasopoulos & Kasai, 2008, looking at grammatical number marking in a non-verbal object categorization task; Pavlenko, 2003, for the expression of (lexical) emotion concepts). Another set of studies on L2 users or early bilinguals found that they develop a shared linguistic and conceptual system, combining elements of both languages, which makes the system different from that of native speakers of either language (for work on object classification see: Ameel, Storms, Malt & Sloman, 2005; Marian & Spivey, 2003; for syntax: Hartsuiker, Pickering & Veltkamp, 2004, also described in Grosjean, 1985; 1998). Findings for early bilinguals on an object naming task (Ameel et al,. 2005) suggest a lexical system that has a "midway" bias and is applied in both languages of the L2 user or bilingual, i.e., it shows convergence between the L1 and L2 pattern. Ameel, Storms, Malt and van Assche (2009) and Ameel et al. (2005) claim that for the early bilinguals investigated, the category boundaries of the lexical concepts of both languages have moved closer to one another, causing the semantic boundaries of particular concepts to become more broadly defined (and in a way, simplified), compared to monolinguals of the particular language. It is argued that such a system satisfies individual cognitive demands, in that having one set of concepts that can be applied to both languages is less demanding on the limitations of memory storage (cf. Ameel et al., 2009; 2005). The consequences of such a system are that language-specific idiosyncrasies are "dropped" and the system is less determined by such means, when compared to monolinguals (Ameel et al., 2009). These findings are in line with those of Grosjean, who argues that early bilinguals should be treated as "unique-language speakers", having language systems that do not always conform to the monolingual standard (1985; 1998).

Schmiedtová and Sahonenko (2008) looked at how Russian and Czech learners of German described goal-oriented motion events. First of all, they found that, given differences in the use of aspectual devices in Czech and Russian L1, speakers take different perspectives on motion events – again underlining the perspectiving role of grammatical aspect for event construal. Concerning the learners, the results show that both groups used L1-rooted principles when conceptualizing goal-oriented motion events in the target language.

Bylund (2009) looked at event construal by advanced Spanish learners of Swedish (with a focus on L1 attrition) and he found that the age of acquisition of the L2 may play a role in determining bilinguals' conceptualization patterns: subjects who had started learning the L2 before the age of twelve showed a divergence from the monolingual Spanish conceptualization preferences when describing motion events in Spanish. Performance in the L2 was not discussed in this study.

Other work on event construal in L2 has mainly investigated the manner/path verb lexicalization typology (e.g., Hohenstein, Eisenberg & Naigles, 2006; see Cadierno, 2008). Cadierno and Ruiz (2006), for example, found that intermediate Danish learners of Spanish showed more traces of L1-specific verb lexicalization patterns in L2 than advanced Danish learners of Spanish, showing how levels of proficiency play a role in the achievement of L2-specific conceptualization preferences.

Generally, we may say that most L2 studies focus on lexicalization patterns and that there is inconclusive evidence in L2 research regarding the acquisition of event conceptualization patterns, i.e., linguistic knowledge that does not rely on the acquisition of formal means only. Proficiency in event conceptualization preferences may be more difficult to gain considering the conceptual complexity of the domains. Factors that aid the achievement of target-like patterns of conceptualization were found to be, e.g., a high level of proficiency (as in Athanasopoulos, 2006; Cadierno & Ruiz, 2006) and there is some evidence that the age of acquisition of the L2 may correlate with the ability to achieve native-like preferences (see Boroditsky, 2001; Bylund, 2009). The next section will elaborate on the aims of the present study.

2. General aims of the article

The present study investigates the type of speaker that has both a high level of proficiency in the two languages and an early age of acquisition of both languages. This is the early bilingual and/or simultaneous bilingual. The focus is on the selection of an aspectual perspective, coupled with specific verbal aspectual forms, by early Dutch–German bilinguals when construing different types of events in Dutch, in comparison to monolingual Dutch and German speakers. Furthermore, the present study will expand on the relation between use of an aspectual perspective and the allocation of attention (eye-tracking measurements) by looking at this interrelation in early bilinguals. According to the definition used in the present article, early bilinguals are speakers who have acquired two languages in early childhood and have an excellent knowledge of both languages. Their level of proficiency is (at a first glance) native-like and exposure and input in both languages is relatively balanced. Within this group, one can further distinguish simultaneous bilinguals. These are speakers who have started to acquire the two languages during the first three or four years of life and who are usually brought up with the one-person one-language principle, ensuring a

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

remarkable capability to switch between the two language systems (cf. Butler & Hakuta, 2004; Meisel, 2004; see also Bialystok, 1999). For this type of speaker the factors that play a crucial role in the debate on the possibility for speakers to control and use two language and conceptual systems independently of one another are held constant, i.e., age of acquisition and possibilities for achieving a high level of proficiency.

A relevant case arises when a particular conceptual distinction is present and productive in one language of a bilingual, but not in the other. As the studies outlined above indicate, native speakers of the former language may be more likely to attend to the concept in relevant contexts and, when conceptualizing events, these speakers may be more likely to convey the aspects of a dynamic situation that are linked to the specific concept, when compared to speakers of languages that only rarely use specific means to convey the same meaning. If speakers of the other language of the bilingual do not encode the same conceptual distinction, the question is how do early bilingual speakers deal with this difference (also suggested as an area for research in Green, 1998). This is the focus of the present study.

2.1 Research questions and hypotheses

As mentioned above, the focus of the linguistic analyses is on the use of progressive aspectual means when verbalizing events. The bilinguals' verbalizations in Dutch will be compared to monolingual speakers of Dutch and German. In order to gain insight into conceptualization processes, the eye movements of all participants are measured before and during their verbal descriptions of the events. The aim is to see how bilingual speakers (speaking Dutch) differ from or resemble monolingual Dutch speakers. Dutch represents a challenge for the bilingual learner in the following respect: although use of an aspectual perspective is not obligatory, in any context, the language currently shows specific preferences that are linked to specific situation types with relevant temporal features (see the next section). Although similar forms for expressing an aspectual perspective are available in German, overall use is rare (see below).

With respect to the eye-tracking analyses, it is hypothesized that monolingual speakers of Dutch and German may show differences in the distribution of attention to specific parts of the stimuli, depending on the use of progressive aspect in describing the stimuli. For bilinguals the question arises as to whether they show patterns in representing events in aspectual terms that are similar to, or divergent from, those of monolingual speakers of Dutch. The analysis of the bilinguals' eye movements will provide insights into the interrelation of the use of specific linguistic means and attention allocation, with the aim of shedding light on bilinguals' possibilities of achieving target-language-specific conceptualizations.

2.2 The languages at stake – expressing "ongoingness" in Dutch and German

The two West Germanic languages show many similarities: they are both verb-second (V2) languages, with a similar syntax and tense system (see, e.g., König & van der Auwera, 2002).

Dutch has several constructions that express progressive aspect. One is the periphrastic *aan het* form (examples 1a, 1b).

(1) a. Ik ben **aan het pianospelen**

"I am at/on the pianoplay – I am playing the piano"

b. Ik ben **piano aan het spelen**

"I am piano at/on the play – I am playing the piano"

The function and meaning of the *aan het* construction is to express the ongoingness of an event at a particular time interval (also in Boogaart, 1999; Booij, 2008). Use of the construction been has shown to be frequent amongst native speakers of Dutch in specific contexts (see in detail Flecken, in press b; von Stutterheim, Carroll & Klein, 2009). Examples (1a, 1b) also show that the syntax concerning the *aan het* construction is rather flexible (see also Boogaart, 1991; 1999), while this is not the case for the means available in German (see below). Use of the *aan het* construction, however, is subject to semantic restrictions. One of the prototypical contexts of use of the *aan het* construction and the associated perspective is with situations depicting ongoing events, without a change in state ("activities", cf. Vendler, 1957, e.g. *to play tennis, to surf*) that occur in the here-and-now, while use with the description of motion events is very rare in monolingual Dutch (see Carroll, Natale & Starren, 2008; Flecken, in press b; von Stutterheim, Carroll & Klein, 2009).

Dutch also has other verbal constructions to express the perspective "event is ongoing". These involve the posture verbs *zitten/liggen/staan* or the motion verb *lopen* plus the infinitive (examples 2–5).

(2) Femke **zit te** werken
"Femke sits to-work – Femke is working"

(3) De baby **ligt te** slapen
"The baby lies to-sleep – The baby is sleeping"

(4) Caspar **staat** de muur **te** schilderen
"Caspar stands the wall to-paint – Caspar is painting the wall"

(5) Marlies **loopt te** zeuren
"Marlies walks to-nag – Marlies is nagging"

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

These constructions are used to a much lesser extent than *aan het* by native speakers of Dutch. Also, to allow for the use of posture verbs it is important for the subject to be in the corresponding physical position.[1] The posture verb constructions are mainly used in contexts that show agents in the physical posture that corresponds with the posture verb used (for details, see Lemmens, 2005).

The means in German are formally similar to the Dutch *aan het* progressive (see 6–7).

(6) Eine junge Frau ist **am Lernen**
"A young lady is at-the learn – A young lady is learning"

(7) Ein paar Männer sind **beim Fussballspielen**
"A couple of men are at-the football-play – A couple of men are playing football"

In contrast to Dutch, the prepositions used cover *an* ('at/on') or *bei* ('by/at')[2] and *dabei* (there-at/by) one of the "busy"-type progressives (cf. Ebert, 2000) (see (8)).

(8) Eine Frau **ist dabei ein Papierflugzeug zu falten**
"A lady is there-at a paper aeroplane to fold – A lady is folding a paper aeroplane"

Experiments eliciting event descriptions with stimuli that include a variety of situation types (e.g., motion events, events showing a change in state) show that native speakers of German (from different regions) rarely express the concept of ongoingness in general, and also rarely by means of the *an* or *bei* construction (see, e.g., von Stutterheim, Carroll & Klein, 2009). Moreover, a higher frequency is typical of a specific German dialect (the "Rheinische Verlaufsform"; for a detailed description see Ebert, 2000; Krause, 2002) and not of Standard German (also in Booij, 2008).

The relevant question arises as to what the bilingual speakers do when construing events in Dutch: Do they show the same preferences as monolingual speakers when expressing ongoingness when it comes to form and usage patterns or will there be evidence for a specific bilingual-Dutch aspectual system?

3. Method

3.1 Participants

The monolingual speakers of Dutch were nineteen students (average age 20.38 years; age range 18–23 years; 13 female, 6 male) at the Radboud University in Nijmegen, the Netherlands, and the German monolingual speakers were nineteen students at the University of Heidelberg in Germany (average age 24.32; age range 20–35 years; 11 female, 8 male). Monolingual native speaker participants were excluded from the analyses when their answers to questions in a language background questionnaire indicated a long stay in an environment where a language other than Dutch or German is spoken, or when they had advanced L2 knowledge of either Dutch or German.[3]

The bilingual participants consisted of twelve secondary school pupils (and 1 teacher). The average age of the pupils was 16.6 years; age range of the majority 16–19 years, plus one 46-year-old; 10 female, 2 male)[4] and were enrolled in a bilingual German–Dutch education programme. They were given a detailed questionnaire relating to their language background. The questionnaire was inspired by parts of existing questionnaires (Gullberg & Indefrey, 2003; Li, Sepanski & Zhao et al, 2006; Marian, Blumenfeld & Kaushanskaya, 2007) but fully adapted and extended to the situation of early bilinguals. Appendix 1 gives some information regarding the acquisition of the two languages; Appendix 2 shows self-assessments of their proficiency and confidence in both languages. Proficiency ratings were made on a scale of 1 to 5 (from 1 "excellent" to 5 "poor") for speaking, understanding, writing, reading, grammar and pronunciation separately. The table gives the ratings calculated as an average of ratings in all six areas.

Most of the participants were in fact simultaneous bilinguals (that is, most of them had been exposed to two languages from birth), but some of the participants had a slightly later onset of acquisition of one of the two languages (all of them, however, before or from the age of four). These speakers are usually also characterized as simultaneous bilinguals (see, e.g., Butler & Hakuta, 2004). Nevertheless, to avoid confusion, the whole group was characterized as early bilinguals. The group as a whole had an early age of acquisition of both languages in

[1] The overlap between the physical position of an agent referred to and the posture verb as used in the construction is a strong tendency, but is not mandatory. In the present data the correspondence is almost always present, though for the *zitten te* construction the restriction seems weaker.

[2] In German, clauses that include the *bei* progressive are usually elliptical (the finite verb *to be* is usually ellipted).

[3] The native speaker participants were labelled "monolingual"; this label is to be interpreted in a narrow sense, meaning not having very advanced knowledge of the other language of investigation (in the case of Dutch native speakers, German and vice versa). The term "monolingual" is used in the sense that it opposes the label "Dutch–German bilingual".

[4] Despite the fact that there is a difference in the educational background and the age range of the monolingual and the bilingual speakers, no differences in patterns of event construal are to be expected. The task at hand deals with the description of simple, everyday events as shown in video clips, common to speakers of all ages. Since the study is based on previous work that shows that event construal patterns are linked to specific aspects of the grammatical system of a language, it is assumed that these patterns are robust and that age differences (at adolescent and adult age – after closure of the acquisition process) should play no role.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Table 1. *Situation types present in the stimulus set.*

No change in state situations	Change in state situations (COS) – effected object	Change in state situations (COS) – affected object	Change in state situations (COS) – two levels of event representation	Motion events (MOTION) – endpoint not reached	Fillers
8 items	10 items	10 items	10 items	10 items	17 items

common and for this reason no differentiation was made within the participant group.[5]

3.2 Experimental procedure

The experiment consisted of the online retelling of a set of sixty-five short video clips, depicting everyday situations. The video clips were dynamic, live recordings, on an average of six seconds in length. In between each video clip a black screen with a white focus point was shown for eight seconds. All participants were told that they would see video clips showing everyday events and they were instructed to tell "what is happening" (in Dutch: *Het is uw opgave om te vertellen wat er gebeurt*, in German: *Es ist Ihre Aufgabe, zu sagen was passiert*). All participants were explicitly told to focus on the event only, and not to give a detailed description of what was shown on the screen. They were also told that they could start to speak as soon as they recognized what was happening. The actual experiment took about fifteen minutes. Beforehand, the participant had the chance to practise the task with six training items. The participant's event descriptions were recorded with a microphone throughout the experiment, and the subjects' eye movements were recorded with eye-tracking equipment during the entire phase in which the video clip was shown. Before the start of the experiment, the cameras were callibrated to adjust them to the subjects' eyes, which took a few minutes. After the experiment, the monolingual participants were asked to fill out a questionnaire concerning their language background.

The bilingual participants were recruited to take part in the same experimental set-up twice: once while speaking in Dutch and once while performing all experiments in German. To reduce memory effects, the second part of the study, i.e., the experimental procedure done in German, took place four months after the bilingual participants had performed all the tasks in Dutch. The current study will only report on the Dutch experiment.

The bilingual participants first took part in an offline narrative retelling task (a silent film) which functioned as a language mode inducing task (for a discussion of the relevance of language mode, see Grosjean, 1998) and as a proficiency test (for the results, see Flecken, in press a). After the narrative retelling task, the bilinguals were asked to carry out the event description task described above. The bilinguals were given the exact same stimuli and experimental set-up as the monolingual participants. They then took part in two more experiments, unrelated to the present study. At the end of the experiment session, the bilinguals were asked to fill out a language background questionnaire.

All in all, the total procedure took about 1.5 hours per bilingual participant and they were paid 10 euros for participating.

3.3 Stimuli

The stimuli consisted of video clips that can be classified into five different situation types (48 critical items in total) and a group of distractor items (see Table 1 and Appendix 3 for a full list of items). The situation type referred to as "no change in state situations" cover situations that do not show a change in state, for example scenes such as two young men surfing, or a person singing. These are events which involve only one temporal interval (1-state events, cf. Klein, 1994), and no change in state is entailed. The change in state situations show an active agent who is acting on a specific object. The agent is shown to be in the middle of a process that leads to the creation of a particular object. These events thus show progression to a clear, tangible resultant state in the near future (examples are knitting a scarf, and painting a picture, with the scarf and the painting as the effected objects) (cf. Natale, 2009).

[5] Since most of the speakers reside in the Netherlands, and there are differences between the ways in which the languages were acquired (whether mainly through communication with father or mother or other persons), and differences in the language that is preferred, it is plausible that there are differences within the group concerning language exposure and dominance. It is reasonable to assume that the current sample consists mainly of speakers who show an increased exposure to the Dutch language, when compared to German. This might also imply that the speakers under analysis can be characterized as "Dutch dominant" early bilinguals. Since at this point it is not possible to systematically control for these issues, the group of speakers is taken together as one sample. I am aware of the fact that in research on bilingualism variables such as exposure and dominance play a crucial role in determining the speakers' performance. For the current study, the main variable that distinguishes the bilinguals under analysis from L2 learners is an early onset of acquisition of both languages.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Table 2. *Progressive marking (percentage of total number of responses) by Dutch and German monolingual native speakers and bilingual Dutch speakers.*

Speaker group	Use of progressive constructions
Monolingual German	53/911 – 5.82%
Monolingual Dutch	280/911 – 30.74%
Bilingual Dutch	262/547 – 47.90%

The other group of change in state situations do not involve the creation, but rather the transformation of an object. Examples of those are peeling potatoes, or wiping a table with a cloth, with the potato and table as affected objects.

The third group of change-in-state situations (5 with an effected object, 5 with an affected object) also show a change in state but offer two options for event construal. First, they can be viewed and verbalized as a macro-event (e.g., *a lady is typing*) (see Bohnemeyer et al., 2007; Talmy, 2000), or the event can be verbalized with the specific events shown in the video (e.g. *a lady is taking a sheet of paper and inserting it into a typewriter*). Another video shows a person in the kitchen adding flour to a cake mix. This can be represented in this specific way or in overall terms as someone *baking a cake*, i.e., as the macro-event (for details, see Carroll & von Stutterheim, to appear).

The motion events involve a person, vehicle or animal moving along a path from point A to point B. These entities are not depicted as reaching the possible goal or endpoint. In other words, the event depicted is a motion event in progress.

All of the above situation types were included in the stimulus set because certain features of the situations depicted in the video clips have proven to be relevant with respect to the marking of the progressive aspect in languages where use of such constructions is frequent yet not fully grammaticalized (see Bouhaous, in preparation; Leclerq, 2008; Natale, 2009). In short, the cross-linguistic findings show that the aspectual means in Italian and French are used most frequently for situations that show progress toward a resultant state, a qualified object (for example *knitting a scarf*) (Carroll, Natale & Starren, 2008; von Stutterheim, Carroll & Klein, 2009).

4. Linguistic analyses

4.1 Results

The focus of the linguistic analysis is on the number of events that are marked with progressive aspectual means, that is, the number of events that explicitly entail a perspective of ongoingness. Table 2 shows the total number of progressives used by monolingual speakers of Dutch and German and by the bilinguals speaking Dutch. Table 3 distinguishes between situation types.[6]

The first analysis focused on the two monolingual speaker groups only. A Mann–Whitney test was conducted to compare the proportion of progressive marking between monolingual Dutch and monolingual German, and the difference was significant ($U = 32$, $p < .001$). The standardized residuals of a chi square analysis showed that the Dutch speakers use more progressives than the Germans when describing the situation types labelled "change in state with an effected object" and "no change in state situations" (χ^2 (4) = 15.088, $p < .001$). A within-group comparison to compare *aan het* marking by monolingual Dutch speakers between all five situation types showed that the motion events were marked with *aan het* significantly less than the other four situation types (Kruskal–Wallis test: H (4) = 36.98, $p < .001$).

The second analysis compared the monolingual Dutch speakers with the bilingual Dutch speakers. A Mann–Whitney test showed that the bilinguals (speaking Dutch) used progressive markers with a greater frequency than the monolingual Dutch speakers, across all situation types. Standardized residuals of a chi-square test revealed that specifically for the situation type motion events and the change in state situations with an effected object the bilingual speakers used more progressive markers than the monolingual Dutch speakers (χ^2 (4) = 19.562, $p < .001$).[7]

If we first take a closer look at the actual means used by the monolingual Dutch speakers and the bilingual Dutch speakers, we see that in both groups mainly the *aan het* construction was used, whereas the other progressive constructions (the posture verb constructions *zitten/staan te*) were hardly used (see Table 4).[8]

Table 4 shows that the higher frequency of use of progressives by the bilingual speakers can be attributed to an increased use of the *aan het* construction only. A speaker analysis revealed that the other progressive constructions were used by the bilingual participants in a manner different from the monolingual Dutch speakers: all occurrences of the *zitten* and *staan te* progressive constructions in the bilingual data appeared in the verbalizations of only two (out of 12) speakers. One of the bilingual participants actually used these posture

[6] For one of the Dutch participants, one verbalization for a no change in state stimulus is missing.

[7] Since we can rule out a transfer effect of German, there is no need to compare the bilinguals' patterns of use of aspect with those of the monolingual Germans.

[8] The other Dutch posture verb construction (*liggen te*) and the motion verb progressive (*lopen te*) are not used. This is probably due to the fact that in the stimulus set no video clips show agents in the respective positions.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Table 3. *Progressive marking by monolingual Dutch and German speakers and bilinguals speaking Dutch per situation type.*

Speaker group	No change in state situations	COS – effected object	COS – affected object	COS – two levels of event representation	MOTION – endpoint not reached
Monolingual German	20/152 – 13.16%	8/190 – 4.2%	7/190 – 3.68%	17/190 – 8.95%	1/190 – 0.53%
Monolingual Dutch	66/151 – 43.71%	83/190 – 43.68%	56/190 – 29.47%	75/190 – 39.47%	0/190 – 0%
Bilingual Dutch	57/88 – 64.77%	81/116 – 69.83%	54/113 – 47.79%	54/113 – 47.79%	16/120 – 13.33%

Table 4. *Different progressive constructions used – monolingual and bilingual Dutch (percentage of total number of responses).*

	Aan het + V –inf zijn	*Zitten/staan te + V-inf*
Monolingual Dutch	237/911 – 26.02%	43/911 – 4.72%
Bilingual Dutch	240/547 – 43.88%	22/547 – 4.02%

Table 5. *Distribution of use of posture verb progressives.*

Participant monolingual	Number of posture verb progressives	Participant bilingual	Number of posture verb progressives
vp01	10	vp01	0
vp02	0	vp02	13
vp03	4	vp03	0
vp04	0	vp04	0
vp05	0	vp05	0
vp06	6	vp06	0
vp07	2	vp07	0
vp08	3	vp08	0
vp09	0	vp09	0
vp10	3	vp10	0
vp11	0	vp11	9
vp12	1	vp12	0
vp13	2		
vp14	1		
vp15	2		
vp16	4		
vp17	4		
vp18	1		
vp19	0		

verb constructions exclusively (for 13 out of 48 critical video clips), without a single occurrence of the *aan het* construction. This is rather different from the way in which they were used by the monolingual Dutch speakers (see the distribution of the use of posture verb progressives in Table 5).

A Mann–Whitney test comparing the frequency of use of the posture verb constructions between the two speaker groups also showed that the monolingual Dutch group used more of these constructions than the bilingual Dutch speakers ($U = 67$, $p < .05$).

A qualitative analysis focusing on the posture verb progressive constructions indicated that these constructions were used mainly when the video clip that was being verbalized actually showed an agent in the respective physical position. Video clips of this type attracted a number of the *zitten* or *staan te* constructions in the monolingual Dutch data. In the bilingual Dutch data only occassionally one of the two bilingual participants who actually used the posture verb progressives also used one in these contexts (see the examples in Table 6). This shows that with respect to the usage preferences of the posture verb forms the bilinguals differ from the monolinguals. In the bilingual data, there is a clear preference for the *aan het* construction only, even though the visual input in the video clips would also allow use of the other constructions. In these cases, the monolinguals make use of all options available (see Table 6).

When taking a closer look at the German data, we see that the number of progressives is low for all situation types (never more than 20 occurrences per situation type). There seems to be a preference to use progressives when expressing situations without a change in state (e.g., *Ein Mann ist beim Billiardspielen* "A man is at-the billiardsplay – a man is playing billiards"). German speakers use the *beim* construction mainly: of all the progressives used in this dataset, 50 (out of 53) include the preposition *bei*, whereas only 2 include *an* and 1 instance exists of the *dabei sein* construction.

4.2 Discussion of the linguistic data

Comparing use of an aspectual perspective in the data by monolingual speakers of Dutch and German, it is clear that the expression of ongoingness in Dutch (*aan het*

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Table 6. *Use of posture verb and* aan het *progressives in specific video clips.*

	Video: a woman is highlighting text in a book (sitting position)		Video: a man is fishing (sitting position)		Video: a woman is knitting a scarf (sitting position)		Video: a woman is cooking (standing position)	
	Mono ($N = 19$)	Bil ($N = 12$)	Mono ($N = 19$)	Bil ($N = 12$)	Mono ($N = 19$)	Bil ($N = 12$)	Mono ($N = 19$)	Bil ($N = 12$)
all prog	12	6	10	8	14	11	14	8
aan het	8	6	7	8	9	10	12	8
posture verb	4	0	3	0	5	1	2	0

construction) is frequent. Significantly, Dutch speakers are sensitive to the specific temporal characteristics of situations that attract use of progressive markers in other languages as well (e.g., visual presence of an effected object has a high attractor effect on the progressive (in the same task) in Italian (Natale, 2009), Modern Standard Arabic (Bouhaous, in preparation) and French (Leclerq, 2008; for more evidence on Dutch, see van Ierland, 2009). Motion events represent a special case since this situation type shows the lowest rate of occurrence for this perspective in Dutch (as well as Italian and French). The events shown in the clips focus on the intermediate phase of the trajectory (between source and possible goal) and the stimuli show a possible endpoint which is, however, *not* reached by the moving object. In Dutch, the results of native speakers' acceptability judgments (Flecken, in press b) also underline the pattern found in the present data: descriptions of motion events (e.g., *gaan* "to go somewhere", *rijden* "to drive somewhere") and the *aan het* form are untypical for speakers of Dutch (see also Carroll, Natale & Starren, 2008). This holds throughout all the pilot studies that were conducted for this analysis (Flecken, 2008). For forty subjects (other than those in the current sample), a progressive construction was only used in 1.35% of all utterances relating to a motion event (13 *aan het* constructions out of a total of 960 utterances). Interestingly, in nearly all these instances the verb used was an activity-like motion verb explicitly expressing not just manner of motion, but also a macro-event such as "being out for a walk" (and not a specific change in place with reference to path of motion or a possible goal (*going along x to y*). The forms used are, for example, *aan het wandelen* ("taking a walk"), *aan het fietsen* ("cycling") and *aan het paardrijden* ("horseriding").[9]

The results for the bilingual speakers show that they also use progressive markers highly frequently. The bilinguals apply the *aan het* progressive in the contexts that are typical attractor areas of the form for the monolingual Dutch speaker (i.e., the no change in state situations and change in state situations with an effected object). It shows that in these semantic domains there is convergence between the monolinguals' and bilinguals' usage preferences for expressing ongoingness. However, there is a significant difference and this applies to the frequency with which an aspectual perspective is expressed by means of the *aan het* form. The bilinguals' use of *aan het* exceeds that of monolingual speakers, in all the situation types tested. This means that we find use of an aspectual perspective also when referring to motion events, the type of situation in which monolingual speakers rarely use an aspectual perspective. Bilingual Dutch examples such as (9) were rarely found in the current monolingual Dutch data, nor in the pilot set (i.e., not found among a sample of in total 59 monolingual Dutch subjects; Flecken, 2008).

(9) 001 twee mensen
002 die aan het lopen zijn
"two people who are walking"

Another example in which the *aan het* construction is used in a way that does not compare with monolingual speakers are those occurrences of predicates marked by *aan het* and also a spatial adjunct expressing an endpoint or goal of the motion (10).

(10) 001 een man
002 die naar een auto aan het wandelen is
"a man who is taking a walk to a car"

For the bilingual group, restrictions on the use of the *aan het* progressive are less prominent in the domain of motion events, compared to monolingual speakers.

A relevant factor in this regard is given with the extent to which the *aan het* construction is used, in comparison to other means such as posture verbs. The findings indicate that the bilingual speakers have a slightly less diversified system in expressing progressive aspect: Dutch monolingual speakers make use of posture verbs when specific properties of the situation allow use of this

[9] For a discussion of why the *aan het* construction is not (yet) compatible with motion events, see von Stutterheim, Carroll and Klein (2009).

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

alternative, i.e., ongoing events in which agents perform actions in a particular physical position (*sits to do x*; *stands to do x*). Bilingual speakers use these alternatives to a significantly lower degree and thus show less variety in range of forms used when expressing an aspectual perspective. They are less sensitive to the factors that lead monolingual speakers to use posture verbs.

It would seem that the bilingual speakers have chosen the option when expressing ongoingness that is most frequent in the input, the *aan het* construction, showing a greater tendency to use the form in constrained contexts, while underusing less frequent alternatives (posture verbs) in contexts in which they do occur in the monolingual data.

In sum, the data show that the bilinguals' patterns of use of progressive aspect in Dutch are different from the monolingual pattern, but not in a sense which would indicate ungrammatical use of language, or cross-linguistic influence from German. The use of means to express an aspectual perspective can be taken as a manifestation of a bilingual-specific language competence.

5. Eye-tracking data

5.1 Research questions: eye-tracking analysis

Differences in the use of aspectual devices are crucial for event construal in that they are linked to different perspectives on events, which are reflected not only in linguistic performance, but also in attention as measured by eye movements (von Stutterheim & Carroll, 2006). The Dutch linguistic data show that the concept of ongoingness represents a productive option for perspective-taking in event conceptualization. Dutch speakers' decisions between a simple (unmarked) form and an aspectual perspective marked with *aan het* depends on features of the specific type of situation. In German, similar progressive means are used at a very low frequency in all situation types. In this sense, Dutch speakers have an extra option to decide on when conceptualizing events, i.e., taking a perspective of ongoingness explicitly or not. The question with respect to the eye-tracking analysis relates to the extent to which this is reflected in the direction of attention during event conceptualization and how the monolingual and bilingual speakers differ.

The results of the linguistic analyses of the bilingual data show a higher tendency to use an aspectual perspective across all situation types, compared to the monolingual groups. In a comparison of the frequencies of use of progressives for all situation types between the three speaker groups, the difference is largest for the stimuli showing change-in-state situations with an effected object (e.g., *knitting a scarf*): the bilinguals mark an aspectual perspective for this type of event in 69.83% of all utterances. In monolingual Dutch, the percentage is 43.68%, whereas German speakers select this perspective in no more than 4.20% of the cases. One may thus also expect differences in direction of attention to specific parts of the situation shown in the video clips – to the part in the video clip in which the ongoing process is presented. This is the area that, first of all, is crucial for the selection of verb form. Most importantly, the linguistic findings show that both the monolingual and the bilingual Dutch speakers activate the concept of progressive aspect given the specific temporal properties of the event depicted in the video clip (i.e., the presence of an effected object). The monolingual and especially the bilingual Dutch speakers are thus expected to pay extra attention to relevant features of the stimulus (of the ongoing action) at the level of conceptualization.

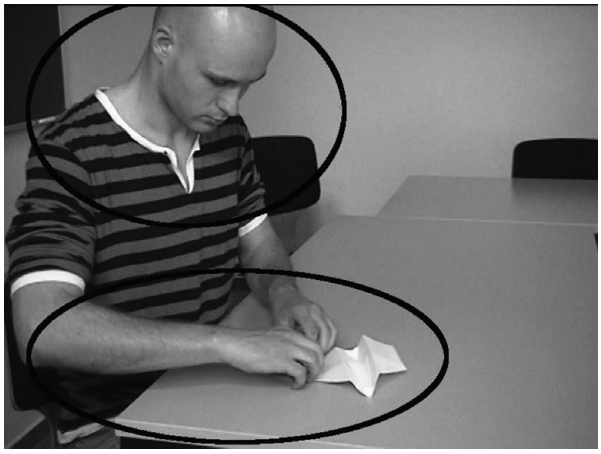


Figure 1. Example of a stimulus (video clip) analyzed for eye movement: two areas of interest.

The next section presents a comparison of the duration and timing of speakers' gaze fixations in this area of interest.

5.2 Method

The same participants, apart from two,[10] as discussed for the linguistic analyses above are included in the analyses of eye movement. The stimuli analyzed are the change in state situations with an effected object (*moulding a vase*). To be able to analyze differences in attention distribution, two specific areas of interest were defined: the part of the video clip showing the ongoing action and the object (labelled AoI (area of interest) "action"), and, on the other hand, the agent (labelled AoI "agent"), or, to be more precise, the upper part of the body of the person who is shown performing the action (see Figure 1).

Only those video clips in which these areas show no overlap, i.e., between that of the AoI of the action and the

[10] One bilingual participant and one monolingual Dutch speaker had to be excluded from the eye-tracking analysis due to a technical problem that occurred during the experiment.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

AoI of the agent, were selected for analyses. The following six scenes were selected:

(i) A woman making a pearl necklace

(ii) A woman building a tower of blocks

(iii) A woman decorating a cake with cream[11]

(iv) A woman sitting on a sofa and knitting a colourful scarf

(v) A man folding a paper airplane

(vi) A man drawing a tree with a pencil

Attention was measured on the basis of the duration for fixations within both AoIs (the time they spent looking at the area of interest), or by means of the time (measured in milliseconds from video clip onset) at which a fixation period[12] started within both AoIs (start time). Both measures for attention (i.e., duration and start times of fixations within AoI) are calculated per subject over all stimuli. The timing data (the start time of the first fixation period within the AoIs) were aggregated across stimuli per subject. All the subsequent analyses were carried out per speaker group.

5.2.1 Apparatus

Eye movement was recorded by a remote eye-tracking device, with binocular eye-tracking capability, of the type Eyefollower by LC Technologies. Stimuli were shown on a 20-inch wide computer screen, and audio as well as gaze movement were recorded with the software NYAN, designed for our purposes by Interactive Minds in Dresden, Germany. The eye-tracking device had a 120 Hz gaze point sampling rate and it was capable of automatic eye acquisition during the entire experiment.

5.3 Results – eye-tracking data

The first analysis focuses on the start time of the first period of fixation within the AoIs. Table 7 shows aggregated start times for the first fixation period within the areas of interest per speaker group in milliseconds.

[11] This scene can actually also be interpreted as a causative action with an affected object – decoration can be a process of change of an existing object, but it can also indicate the creation (the finishing touch of the creation process) of an object which is not totally finished. Due to the fact that this particular scene has two clearly separated areas of interest, it was included in the analyses.

[12] Measures for direction of attention were based on the following; the START TIME of the first set of fixations within the AoI and the DURATION of the period of the time that the gaze remained focused within the AoI (which in the present analysis relates to the second time speakers spent a period fixating points within the AoI, as well as the total duration for all fixations within the AoI). In other words, in this period there were no fixations outside the area of interest in question.

Table 7. *Average start times of first period of fixation in the two areas of interest.*

Start time for period of fixation in AoI ACTION	**Average (ms)**	**SD (ms)**
Bilingual Dutch	422.74	129.00
Monolingual Dutch	545.13	144.00
Monolingual German	547.23	186.30
Start time for period of fixation in AoI AGENT	**Average (ms)**	**SD (ms)**
Monolingual German	418.34	246.60
Monolingual Dutch	547.56	172.50
Bilingual Dutch	738.28	476.30

A repeated measures ANOVA shows that there is a significant interaction between the within-subjects factor area of interest and the between-subjects factor speaker group ($F(2,48) = 5.18$, $p < .05$). A paired samples t-test shows that for the bilingual Dutch group, there is a trend to have an earlier start time for the first fixation period within the area of interest of the action, rather than within the agent area ($t(10) = -0.234$, $p = .069$). This is not the case for either monolingual speaker group.

A condition (area of interest) x speaker group ANOVA shows a significant effect of the AoI agent ($F(2,48) = 4.39$, $p < .05$). Post-hoc tests (LSD) show that German speakers have an earlier start time for the first fixation period within the AoI of the agent than the bilingual Dutch speakers ($p < .001$). When comparing the start time of the first fixation period (AoI agent) of the bilingual Dutch speakers to the start time of monolingual Dutch speakers, post-hoc tests show a trend ($p = .084$): the bilingual Dutch speakers tend to look later at the agent than both monolingual groups. There is no difference between the two monolingual groups. This indicates that the bilingual Dutch speakers tend to look at the action earlier than at the agent, when compared to both monolingual groups. The German speakers tend to look earlier at the agent.

If we compare the total duration of the second fixation period within the two AoIs between groups, we see that there is a trend for differences in the AoI of the action ($F(2,48) = 2.73$, $p = .075$), and a highly significant effect of the AoI of the agent ($F(2,48) = 7.13$, $p < .001$). Table 8 and Figure 2 show the total duration of the second fixation period for the two AoIs.

Post-hoc tests (LSD) show that the bilingual Dutch speakers have a longer second fixation period in the AoI of the action when compared to the German speakers ($p < .05$), and this is a trend when compared to the monolingual Dutch group ($p = .051$). There is no difference in fixation time between the two monolingual groups.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Table 8. *Average duration of the second period of fixation in both areas of interest.*

Second period of fixation: duration for AoI ACTION	**Average (ms)**	**SD (ms)**
Monolingual German	2380.80	966.53
Monolingual Dutch	2455.90	991.61
Bilingual Dutch	3142.52	616.68
Second period of fixation: duration for AoI AGENT	**Average (ms)**	**SD (ms)**
Bilingual Dutch	319.73	88.55
Monolingual Dutch	475.31	128.17
Monolingual German	508.22	163.06

Table 9. *Average total fixation time per speaker group in both areas of interest.*

Total fixation time in AoI ACTION	**Average (ms)**	**SD (ms)**
Monolingual German	4153.08	832.03
Monolingual Dutch	4505.46	628.34
Bilingual Dutch	4782.86	620.76
Total fixation time in AoI AGENT	**Average (ms)**	**SD (ms)**
Bilingual Dutch	613.05	256.23
Monolingual Dutch	863.20	367.60
Monolingual German	1065.21	366.96

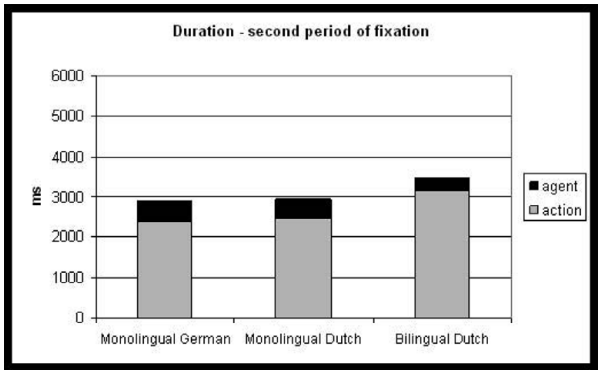


Figure 2. Average duration of second period of fixation in both areas of interest.

Looking at the total duration of all the fixations within both areas of interest (total fixation time), again differences arise between the two AoIs (repeated measures analysis: $F(1,48) = 718.36$, $p < .001$) and the interaction between AoI and the three speaker groups ($F(2,48) = 5.00$, $p < .05$) (see Table 9 and Figure 3).

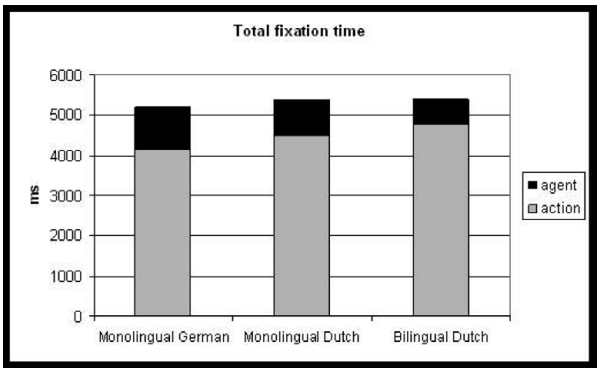


Figure 3. Distribution of total fixation time over the two areas of interest.

The *t*-tests for paired samples show that, for all language groups, there is a significantly longer fixation time on the action than on the agent (Monolingual German: $t(18) = 12.82$, $p < .001$; Monolingual Dutch: $t(17) = 18.87$, $p < .001$; bilingual Dutch: $t(10) = 18.87$, $p < .001$).

A condition x language ANOVA shows that for the action AoI there is a trend for differences between groups ($F(2,48) = 2.95$, $p = .062$), and a significant effect of the agent AoI ($F(2,48) = 6.11$, $p < .05$). Post-hoc tests (LSD) show that the German speakers spend less time overall looking in the action AoI, compared to the bilingual Dutch speakers ($p < .05$). Within the agent AoI we see that the bilingual Dutch group has less fixation time than the German group ($p < .001$) and the shorter fixation time is a trend when compared to the monolingual Dutch group ($p = .061$). The monolingual Dutch speakers also show a trend for a shorter fixation time at the agent AoI than the German speakers ($p = .080$). The distribution of attention is such that all groups look longer at the action than at the agent. A between-group comparison of overall fixation time shows that the monolingual Dutch speakers and the bilinguals look at the agent for a shorter period of time (and at the action for a longer period of time) than the German speakers. The bilingual Dutch speakers again show a trend for looking at the agent for a shorter period of time (and at the action for longer) than the monolingual Dutch speakers.

5.4 Discussion of the eye-tracking data

Overall the analyses of fixation time within the two identified AoIs (although many comparisons showed trends, possibly due to a power problem) indicate that the bilingual Dutch speakers have a long fixation time at the part of the video clip where the action (the creation process) is shown. This is interpreted as showing that

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

the bilingual speakers pay more attention and have more interest in the ongoing process shown in the video clips, rather than the agents that are performing the action. The same holds for the monolingual Dutch speakers, though to a lesser extent.[13] In both cases, the higher degree of attention to the depicted ongoing process correlates with a high frequency of use of progressive aspectual forms.

These results support the hypothesis that relevant temporal features of the stimuli led monolingual as well as bilingual speakers of Dutch to take an aspectual perspective of ongoingness when conceptualizing the specific events. It is argued that the activation of this perspective is linked to the fact that the language has a productive linguistic form available in expressing this concept, which is not the case in German.

The bilingual speakers, first of all, showed an even higher frequency of selection of an aspectual perspective and it was hypothesized that they would show longer (or earlier) fixation times within the area of interest that shows the ongoing process. This is indeed what the eye-tracking analyses have revealed (although again, one should note that most effects indicated trends).

The results of the eye-tracking analyses thus suggest that the monolingual and bilingual Dutch speakers' increased degree of attention to the action in progress can be linked to the selection of the aspectual concept "event is ongoing". Given the specific temporal features of the event shown in the stimulus, the monolingual and bilingual Dutch speakers select the *aan het* progressive to refer to the event. The increased degree of attention to this part of the stimulus could also reflect the part of the speech planning process which relates to the selection of the verb form (part of the formulation process and not so much conceptualization, in Levelt's (1989) terms).

All in all, the attention patterns are linked to the speech production results, and they appear to be language-specific (or rather speaker group-specific). The data show that the Dutch–German bilinguals have a unique pattern of scanning the stimulus material for verbalization, which is linked to their unique pattern of use of specific linguistic forms, compared to the monolinguals. Although the present results of the eye-tracking analyses are tentative, the differences, though small, do reveal interesting trends which are in line with the linguistic analyses.

[13] Even though in the present analyses the data of the monolingual Dutch and German speakers do not always differ significantly, another analysis which involves a larger sample ($N = 28$ per group) does show a significantly longer (and earlier) fixation time at the action for the (monolingual) Dutch speakers, when compared to the German speakers (see Flecken, 2009). The fact that in this article the differences are less pronounced is thus taken to indicate a lack of power. Nevertheless, the trends found do support the central hypothesis that differences in attention are driven by differences in use of aspect.

6. General discussion and conclusion

The present study has provided evidence for the interrelation between the selection of specific aspectual categories and specific patterns of event conceptualization, as reflected in the direction of attention during information intake (both for and while speaking). Taking the case of the *aan het* progressive in Dutch, a high frequency of use of the form by monolingual and bilingual speakers in event construal correlates with a marked direction of attention to the part of the stimulus that shows the event in progress.

The early Dutch–German bilinguals showed a specific preference in the use of an aspectual perspective in Dutch, at the linguistic as well as the conceptualization level. Even though the bilinguals apply the *aan het* progressive to a high degree in contexts that represent attractor areas for monolingual Dutch speakers, the findings show a less constrained pattern of use of the Dutch *aan het* progressive at the expense of other options (posture verbs). The bilinguals use this perpective on motion events to a higher degree, as with the other situation types studied, but with motion events they produce event descriptions that are not typical for native speakers (e.g., the combination of progressive aspect (*aan het*) with an endpoint). These findings indicate that the semantic restrictions on the use of the progressive do not replicate those found for monolingual speakers and are thus bilingual-specific. This in a way resembles the results of Ameel et al. (2009; 2005) who found a comparable pattern for lexical object naming since the bilinguals in their sample had weaker semantic boundaries for specific lexical concepts. Significantly, the bilinguals' patterns of attention allocation differ compared to both monolingual groups, suggesting that the Dutch–German bilingual, when speaking Dutch, has a bilingual-specific event conceptualization system. This system differs from monolingual Dutch speakers and does not show any sign of cross-linguistic influence from the monolingual German pattern. In this sense, the current study may provide an alternative to the possibilities in conceptualization patterns as outlined by Jarvis and Pavlenko (2008, see 1.1): increased use and extension of a conceptualization pattern (in this case extension of an aspectual perspective to goal-oriented motion events) that departs from the conceptualization preferences found for monolinguals of one of the two languages – that is, the Dutch pattern.

An important question remains: In what way do the early Dutch–German bilingual speakers go about solving tasks of event construal in German? Might we here again find evidence that the bilingual speaker is a very competent but unique language user (cf. Grosjean 1998), or will we find traces of cross-linguistic influence from the Dutch system? These questions will be the focus of a forthcoming study.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Appendix 1. Overview of bilingual participants

Subject	M/F	Age	Country of birth	Country of residence	Dutch acquired	German acquired	Other languages in childhood
1	f	19	Netherlands	Germany	Home (mother + father)	Outside the home (two years)	–
2	f	46	Germany	Netherlands	Outside the home (two years)	Home (mother + father)	–
3	f	17	Belgium	Belgium	Home (mother)	Home (father)	–
4	f	16	Netherlands	Netherlands	Home (mother)	Home (father)	–
5	m	19	Germany	Netherlands	Home (mother)	Home (father)	English
6	f	16	Germany	Netherlands	Home (mother + father)	Outside the home (since birth)	–
7	f	16	Netherlands	Netherlands	Home (father)	Home (mother)	–
8	f	16	Netherlands	Netherlands	Outside the home (since birth)	Relatives (four years)	Turkish
9	f	16	Germany	Netherlands	Home (father)	Home (mother)	–
10	f	16	Germany	Netherlands	Home (father)	Home (mother)	–
11	f	16	Netherlands	Netherlands	Home (mother)	Home (father)	–
12	m	16	Germany	Germany	Outside the home (since birth)	Home (mother + father)	–

Appendix 2. Bilinguals' self-assessed proficiency in both languages

Participant	Preferred language	Self-assessed proficiency in Dutch	Self-assessed proficiency in German	Confidence in Dutch	Confidence in German
1	German	2.17	1.00	1.67	1.00
2	German	1.17	1.00	1.67	1.00
3	German	1.67	1.17	1.00	1.00
4	German	1.33	2.33	1.67	1.33
5	Dutch	2.50	1.83	2.00	1.67
6	Dutch	1.17	2.83	1.00	2.00
7	Dutch	1.00	1.17	1.00	1.00
8	Dutch	1.67	2.00	1.33	1.67
9	Dutch	1.17	1.17	1.00	1.00
10	Dutch	1.00	1.67	1.00	1.00
11	Dutch	2.17	3.17	1.00	1.67
12	Dutch	1.08	1.25	1.33	1.33

Appendix 3. Overview of critical stimuli

No change in state situations	Change in state situations (COS) – affected object	Change in state situations (COS) – effected object
a man surfing	a woman peeling potatoes	a woman building a card house
a woman playing the piano	a man doing the dishes	a man folding an airplane
men playing football	a woman wiping off a table	a woman beading a necklace
a woman playing the flute	a woman beating an egg	a potter moulding a vase
a man practising with a dumbbell	a man sweeping the floor	a man drawing a tree
two women playing cards	a man shredding paper	a woman knitting a scarf
people playing tennis	a woman decorating glasses/drinks	a woman building a tower of blocks
people playing billiards	a woman opening a can	a woman making a clay man
	a woman cutting a cucumber	a man painting
	a woman cutting a piece of paper	a woman decorating a cake

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Change in state situations (COS) – two levels of event representation	Motion events (MOTION) – endpoint not reached
woman inserting paper/typing	car driving towards a petrol station
woman stirring in a bowl/baking	man climbing a ladder
man hammering/repairing shoes	car driving towards a village
woman taking something from a shelf/shopping	car driving towards a house
woman writing something on the blackboard/teaching	woman walking towards a car
woman adding salt to a soup/cooking	woman walking towards a barrier
woman picking up sheets of paper/tidying an office	someone riding a horse towards a gate
woman putting on lip gloss/putting on make-up	child walking towards a playground
woman highlighting text/studying	women walking towards a house
man casting a line/fishing	man walking towards a car

References

Ameel, E., Storms, G., Malt, B. C., & van Assche, F. (2009). Semantic convergence in the bilingual lexicon. *Journal of Memory and Language*, 60, 270–290.

Ameel, E., Storms, G., Malt, B. C., & Sloman, S. A. (2005). How bilinguals solve the naming problem. *Journal of Memory and Language*, 53, 60–80.

Athanasopoulos, P. (2006). Effects of the grammatical representation of number on cognition in bilinguals. *Bilingualism: Language and Cognition*, 9 (1), 89–96.

Athanasopoulos, P., & Kasai, C. (2008). Language and thought in bilinguals: The case of grammatical number and nonverbal classification preferences. *Applied Psycholinguistics*, 29, 105–123.

Bialystok, E. (1999). Cognitive complexity and attentional control in the bilingual mind. *Child Development*, 70, 636–644.

Bock, K., & Griffin, Z. (2001). Producing words: How mind meets mouth. In L. Wheeldon (ed.), *Aspects of language production*, pp. 7–47. Hove: Psychology Press.

Bohnemeyer, J., Enfield, N., Essegbey, J., Ibarretxe-Antunano, I., Kita, S., Lüpke, F., & Ameka, F. (2007). Principles of event segmentation: The case of motion events. *Language*, 83 (3), 495–532.

Boogaart, R. (1991). "Progressive aspect" in Dutch. In F. Drijkoningen & A. v. Kemenade (eds.), *Linguistics in the Netherlands*, pp. 1–9. Amsterdam: Benjamins.

Boogaart, R. (1999). *Aspect and temporal ordering: A contrastive analysis of Dutch and English*. Den Haag: Holland Academic Graphics.

Booij, G. (2008). Constructional idioms as products of linguistic change: The *aan het* + infinitive construction in Dutch. In A. Bergs & G. Diewald (eds.), *Constructions and language change*, pp. 79–104. Berlin: Mouton de Gruyter.

Boroditsky, L. (2001). Does language shape thought? Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, 43, 1–22.

Bouhaous, A. (in preparation). *Zeitstrukturen im Arabischen*. Dissertation, University of Heidelberg.

Butler, Y., & Hakuta, K. (2004). Bilingualism and second language acquisition. In T. Bhatia & W. Ritchie (eds.), *The handbook of bilingualism*, pp. 114–145. Oxford: Blackwell.

Bylund, E. (2009). Effects of age of L2 acquisition on L1 event conceptualization patterns. *Bilingualism: Language and Cognition*, 12 (3), 305–322.

Cadierno, T. (2008). Learning to talk about motion in a foreign language. In P. Robinson & N. Ellis (eds.), *Handbook of cognitive linguistics and second language acquisition*, pp. 239–275. New York: Spon Press.

Cadierno, T., & Ruiz, L. (2006). Motion events in Spanish L2 acquisition. *Annual Review of Cognitive Linguistics*, 4, 183–216.

Carroll, M., & Lambert, M. (2003). Information structure in narratives and the role of grammaticised knowledge: A study of adult French and German learners of English. In C. Dimroth & M. Starren (eds.), *Information structure and the dynamics of language acquistion*, pp. 267–287. Amsterdam: Benjamins.

Carroll, M., & Lambert, M. (2006). Reorganizing principles of information structure in advanced L2s: A study of French and German learners of English. In H. Byrnes, H. Weger-Guntharp & K. Sprang (eds.), *Educating for advanced foreign language capacities*, pp. 54–73. Georgetown: Georgetown University Press.

Carroll, M., Natale, S., & Starren, M. (2008). Acquisition du marquage du progressif par des apprenants germanophones de l'italien et néerlandophones du français. *AILE*, 26, 31–50.

Carroll, M., & Stutterheim, C. von (1993). The representation of spatial configurations in English and German and the grammatical structure of locative and anaphoric expressions. *Linguistics*, 31 (6). 1011–1041.

Carroll, M., & Stutterheim, C. von (to appear). Event representation, event-time relations and clause structure: A cross-linguistic study of English and German. In J. Bohnemeyer & E. Pederson (eds.), *Event representation in language: Encoding events at the language–cognition interface*. Cambridge: Cambridge University Press.

Carroll, M., Stutterheim, C. von & Nüse, R. (2004). The language and thought debate: A psycholinguistic approach. In C. Habel & T. Pechmann (eds.), *Approaches to language production*, pp. 183–218. Berlin: de Gruyter.

CAMBRIDGE JOURNALS
http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Ebert, K. (2000). Progressive markers in Germanic languages. In Ö. Dahl (ed.), *Tense and aspect in the languages of Europe*, pp. 605–653. Berlin: Mouton de Gruyter.

Flecken, M. (2008). Motion event construal in L1 Dutch: A pilot study. Unpublished data corpus.

Flecken, M. (2009). Event conceptualization by early bilinguals. Paper presented at ISB7, Utrecht.

Flecken, M. (in press a). Macroplanning in narratives: Assessing bilingual attainment. *International Journal of Bilingualism*.

Flecken, M. (in press b). What native speaker judgements tell us about the grammaticalization of a progressive aspectual marker in Dutch. *Linguistics*.

Griffin, Z. (2004). Why look? Reasons for eye movements related to language production. In J. Henderson & F. Ferreira (eds.), *The integration of language, vision, and action: Eye movements and the visual world*, pp. 213–247. New York: Taylor & Francis.

Grosjean, F. (1985). The bilingual as a competent but specific speaker–hearer. *Journal of Multilingual and Multicultural Development*, 6, 467–477.

Grosjean, F. (1998). Studying bilingualism: Methodological and conceptual issues. *Bilingualism: Language and Cognition*, 1, 131–149.

Gullberg, M., & Indefrey, P. (2003). *Language Background Questionnaire. Developed in The Dynamics of Multilingual Processing*. Nijmegen: Max Planck Institute for Psycholinguistics.

Hartsuiker, R., Pickering, M., & Veltkamp, E. (2004). Is syntax separate or shared between languages? Cross-linguistic syntactic priming in Spanish–English bilinguals. *Psychological Science*, 15 (6), 409–414.

Hohenstein, J., Eisenberg, A., & Naigles, L. (2006). Is he floating across or crossing afloat? Cross-influence of L1 and L2 in Spanish–English bilingual adults. *Bilingualism: Language and Cognition*, 9 (3), 249–261.

Ierland, S. van (2009). Grammatical features influencing information structure: The case of L1 and L2 Dutch and English. LOT dissertation series 245.

Jarvis, S., & Pavlenko, A. (2008). *Crosslinguistic influence in language and cognition*. London: Routledge.

Klein, W. (1994). *Time in language*. London: Routledge.

König, E., & Auwera, van der, J. (2002). *The Germanic languages*. London: Routledge.

Krause, O. (2002). *Progressive Verbalkonstruktionen im Deutschen: Ein korpusbasierter Sprachvergleich mit dem Niederländischen und dem Englischen*. Tübingen: Niemeyer.

Leclerq, Pascale (2008). L'influence de la langue maternelle chez les apprenants adultes quasi-bilingues dans une tâche contrainte de verbalisation. *AILE*, 26, 51–70.

Lemmens, M. (2005). Aspectual posture verb constructions in Dutch. *Journal of Germanic linguistics*, 17, 183–217.

Levelt, W. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

Levelt, W., Roelofs, A., & Meyer, A. (2002). A theory of lexical access in speech production. In G. T. M. Altmann (ed.), *Psycholinguistics*, pp. 278–377. London: Routledge.

Li, P., Sepanski, S., & Zhao, X. (2006). Language history questionnaire: A Web-based interface for bilingual research. *Behaviour Research Methods*, 2, 202–210.

Marian, V., Blumfeld, H., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q). *Journal of Speech Language and Hearing Research*, 50 (4), 940–967.

Marian, V., & Spivey, M. (2003). Competing activation in bilingual language processing: Within- and between-language competition. *Bilingualism: Language and Cognition*, 6, 97–115.

Meisel, J. (2004). The bilingual child. In T. Bhatia & W. Ritchie (eds.), *The handbook of bilingualism*, pp. 91–113. Oxford: Blackwell.

Natale, S. (2009). *Gebrauchsdeterminanten der verbalperiphrase stare + gerundio*. Tübingen: Narr (Tübinger Beiträge zur Linguistik).

Papafragou, A., Hulbert, J., & Trueswell, J. (2008). Does language guide event perception? Evidence from eye movements. *Cognition*, 108, 155–184.

Pavlenko, A. (2003). Eyewitness memory in late bilinguals: Evidence for discursive relativity. *The International Journal of Bilingualism*, 7 (3), 257–281.

Pavlenko, A. (2005) Bilingualism and thought. In A. De Groot & J. Kroll (eds.), *Handbook of bilingualism: Psycholinguistic approaches*, pp. 433–453. Oxford: Oxford University Press.

Schmiedtová, B., & Sahonenko, N. (2008). Die Rolle des grammatischen Aspekts in Ereignis-Enkodierung: Ein Vergleich zwischen Tschechischen und Russischen Lernern des Deutschen. In P. Gommes & M. Walter (eds.), *Fortgeschrittene Lernervarietäten: Korpuslinguistik und Zweitspracherwerbforschung*, pp. 45–71. Tübingen: Niemeyer.

Schmiedtová, B., Stutterheim, C. von & Carroll, M. (in press). Implications of language-specific patterns in event construal of advanced L2 speakers. In A. Pavlenko (ed.), *Naming the world in two languages: Languages and cognition in the bilingual mind*. Bristol: Multilingual Matters.

Slobin, D. (1996). From "thought to language" to "thinking for speaking". In J. Gumperz & S. Levinson (eds.), *Rethinking linguistic relativity*, pp. 70–96. Cambridge: Cambridge University Press.

Stutterheim, C. von & Carroll, M. (2006). The impact of grammatical temporal categories on ultimate attainment in L2 learning. In H. Byrnes, H. Weger-Guntharp & K. Sprang (eds.), *Educating for advanced foreign language capacities*, pp. 40–53. Georgetown: Georgetown University Press.

Stutterheim, C. von, Carroll, M., & Klein, W. (2009). New perspectives in analyzing aspectual distinctions across languages. In W. Klein & P. Li (eds.), *The expression of time*, pp. 195–216. Berlin: Mouton de Gruyter.

Stutterheim, C. von & Lambert, M. (2005). Crosslinguistic analysis of temporal perspectives in text production. In H. Hendriks (ed.), *The structure of learner varieties*, pp. 203–230. Berlin: de Gruyter.

CAMBRIDGE JOURNALS

http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51

Stutterheim, C. von & Nüse, R. (2003). Processes of conceptualisation in language production: Language-specific perspectives and event construal. *Linguistics (Special Issue: Perspectives in language production)*, 41, 851–881.

Stutterheim, C. von, Nüse, R., & Murcia Serra, J. (2002). Cross-linguistic differences in the conceptualisation of events. In H. Hasselgård, S. Johansson, C. Fabricius-Hansen & B. Behrens (eds.), *Information structure in a cross-linguistic perspective*, pp. 179–198. Amsterdam: Rodopi.

Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen (ed.), *Language typology and syntactic description*, Vol. III, pp. 57–149. Cambridge: Cambridge University Press.

Talmy, L. (1988). The relation of grammar to cognition. In B. Rudzka-Ostyn (ed.), *Topics in cognitive linguistics*, pp. 165–205. Amsterdam: John Benjamins.

Talmy, L. (2000). *Toward a cognitive semantics*. Cambridge, MA: Bradford Book.

Vendler, Z. (1957). Verbs and times. *Philosophical Review*, 66 (2), 143–160.

CAMBRIDGE JOURNALS

http://journals.cambridge.org Downloaded: 18 Sep 2014 IP address: 192.87.79.51