Study of motion depiction in visual language

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Abstract

As comics belong to a genre of visual language in which information is conveyed through either static images or text, it is a challenge to depict motion in it. However, recent comic artists are becoming more capable of generating vivid images of motion. Motion can be expressed by cues that can stand alone, like postures, which are often supported by cues that cannot stand alone, like motion lines. Previous literature suggests multiple possible influential factors on how comics depict its motion. Much evidence has been found about language typology as possible predictor, but literature also suggests global region, comic style, and publication date as influential factors. I therefore use this thesis to ask: *What factors influence the depiction of motion in comics?* In order to investigate this, I annotated and analyzed 60 comics from 6 different countries (China, Japan, Nigeria, Russia, Spain, United States) on their usage of several motion cues and connected this to path explicitness. In contrast to what was hypothesized, language typology did not predict motion. In line with our hypothesis, manga used the most motion lines, circumfixing lines, and suppletion lines. North America used the most postural cues and implicit paths, which coheres with the hypothesis that postural cues predict implicit paths. On the whole, I found various factors that affect how motion is depicted. Many psychological studies of motion in comics do not take multiple influential factors of motion depiction into account. I therefore suggest future research to broaden their horizon when studying motion.

Keywords: visual language, motion, corpus study, language typology, comic style

Introduction

As opposed to dynamic content, it is hard to convey motion in static images. Yet, this does not mean that static images do not convey any dynamic information. There exists a cultural difference in the way of depicting motion in visual languages. Comics belong to a genre in which information is conveyed through both verbal and visual language. In early comic history, motion depiction remained rudimentary for a long time (Potsch & Williams, 2012). However, the art of depicting action and motion in visual language, like comics, has progressed to such an extent that nowadays, motion can be conveyed with greater vividness (Potsch & Williams, 2012).

The conceptualization of motion can be expressed by both a manner and a path. The former shows how the figure or object is moving, while the latter shows the direction of its motion (Talmy, 1985). Manner is often understood on its own, while a path often needs a manner to create meaning. A way to convey motion in comics is the use of cues. Cohn (2018) distinguishes motion in comics by natural cues that can stand alone (e.g., postural cue) and cues that cannot stand alone (e.g., motion lines). In this case, postural cues can be seen as manner, and motion lines as path. Since those natural cues, like postures, have a meaning on its own, they are easier to understand for the reader, according to Friedman and Stevenson (1975). Cues that cannot stand alone are called affixes (e.g., motion lines). Affixes must attach to an object or a figure to create meaning. Therefore, those non-literal indicators of motion are perceived as less understandable on its own (Friedman & Stevenson, 1975).

Postural cues (i.e., poses that a figure takes) are widely used in visual language to indicate the basic manner of motion information, either with or without affixes. Motion lines (i.e., lines trailing behind an object) are mostly used to make the motion more understandable by clarifying the direction of the path. There also exist other motion cues, but motion lines and postural cues are the most prototypical ones. Motion lines support the depiction of the movement of an object or a figure. In most cases, motion lines are meant to indicate the explicitness of the path, by showing the origin of the path. Motion lines do not only convey the direction of motion, but can also clarify manner of path information, such as speed of motion, by using different shapes and quantities of lines (Hayashi et al. 2012). As suggested by Geisler (1999), motion lines aid in resolving ambiguities of path directions, by showing the path of the object traversed explicitly. In visuals, a path can be considered as explicit when motion lines, context or postural cues clearly indicate the direction of motion. When there is no clear direction of motion, or parts of motion occur off panels, path information remains implicit.

As comics belong to a genre of visual language in which information is expressed through either static images or text, it is hard to depict motion in it. Former studies have not explicitly analyzed how motion appears in actual comics around the world, but at least indicated that motion depiction differs between them. Several studies have found various factors that might have an impact on the way in which motion is depicted across comics. Among others, Tversky and Chow (2017) claimed that language typology is a highly influential factor of motion depiction. Besides, they also concluded that there are differences in how several global regions depict their motion in comics. Caglioti et al. (2009) claimed that motion depiction differs between drawing styles of comics, while Potsch and Williams (2012) appointed publication date as influential factor of motion depiction. However, no study has yet looked at all these factors in an actual corpus analysis of comics. Thus, in order to study motion depiction and different types of motion cues around the world, this thesis asks: *How is motion depicted across comics?*

Theoretical Framework

As mentioned before, it is often a struggle to convey motion in static visual language. The importance of explicit motion depiction can be emphasized through the study of Cohn and Maher (2015). They conducted an experiment in which viewing times of comic panels with motion lines were compared to viewing times of those with anomalous lines (reversed lines) or no motion lines. The results showed significant longer viewing times for panels with anomalous lines and panels without motion lines, while the viewing times for panels with motion lines were significantly faster. This suggests that motion lines are responsible for faster comprehension of panels and its path directions, and that motion lines provide more comprehension to motion beyond the usage of only postural cues (Cohn & Maher, 2015). Motion depiction therefore probably has an actual influence on readers' visual language experience. But what factors could possibly influence motion depiction across comics, and why? I elaborate on this below.

Many researchers conducted studies about motion depiction predicted by language typology. Talmy (1985) distinguishes two types of languages: satellite-framed languages (S-languages) and verb-framed languages (V-languages). In written language, S-languages expresses path information in a preposition *(e.g., she ran **out** of the room)*, while V-languages uses manner and path in a verb *(e.g., she **exited** the room **by running**)*. The article of Slobin (2003) claims that S-languages have more motion event salience than V-languages. It also suggests that increased motion event salience in S-languages could be also reflecting in mental imagery. Speakers of S-languages generally report more vivid descriptions of motion, which implies that their mental imagery for motion events contains more information about paths of motion. Besides, S-languages seem to contain more manner verbs in their lexicon. Jovanović & Kentfield (1998) conducted a study about 115 English (S-language) manner verbs, which only found 79 counterparts in French (V-language). This implies that speakers of S-languages can linguistically express motion in many more ways than speakers of V-languages. The observation that speakers of S-languages use more manner verbs occurs not only at all ages, but also with higher level of diversity (Özçalışkan & Slobin, 1999). However, not all studies on S-languages and V-languages regarding motion depiction are on the same line. Because V-languages frame manner in a separate verb, motion depiction would require more effort and attention, in contrast to the increased salience of paths in motion events by S-languages (Slobin, 2000).

Tversky and Chow (2017) conducted a study about path depiction in action comics. They invited native English speakers and native Japanese speakers to rate Chinese, English, Italian and Japanese comics on the degree of action in it. The study results of Chinese and English comics (S-languages) were compared with Japanese and Italian (V-languages) ones. Results showed that S-language comics contain more explicit motion compared to V-language comics. Besides, participants in the study rated panels from S-languages as more 'active' than those from V-languages. Explicitness of paths often goes together with the usage of motion lines, since motion lines explicitly indicate the path traversed.

Additional corpus research has found that comics created by speakers of S-languages uses more motion lines compared to comics created by speakers of V-languages when depicting motion (Hacımusaoğlu & Cohn, In preparation). The study analyzed a corpus of 85 comics created by S-language speakers and V-language speakers. They also studied path segmentation in comics, which can be summarized by source, route, and goal. Source (from) is the departure of the motion, route (via) is the travelled path, while goal (to) is the arrival and endpoint of the motion (Bohnemeyer et al., 2007). Hacımusaoğlu & Cohn (In preparation) showed that, besides motion cues, especially routes were more depicted in S-languages compared to V-languages. In turn, the study found that V-language comics tend to use more postural cues than affixes as opposed to S-languages using both comparably. This might be because actions in V-languages mostly remain implicit, implying that postural cues could predict implicit motion. In line with this, Hacımusaoğlu & Cohn (In preparation) also claimed that postures convey motion information implicitly.

There exists no geographical logic in the distribution of S-languages and V-languages. For example, Japanese is a V-language, while Chinese is an S-language. Therefore, the findings of language typology on motion depiction are largely language-based instead of geographics-based. However, previous literature also suggests that motion depiction could be influenced by geographics, like global regions. Cohn (2017) conducted a study in which he analyzed path salience in motion events in 35 comic books, originating from either North America, East Asia, or Europe. He found significant differences on path salience and motion events between the two language typologies but did not find any differences between the global regions, while Tversky and Chow (2017) did encounter a difference in the degree of action in panels between Western (i.e., United States, Italy) and Eastern (i.e., China, Japan) comics. Tversky and Chow (2017) concluded that comics from Eastern countries were rated higher in action than comics from Western countries. This could suggest that comics from East Asia, Europe and Africa depict more action than comics from North America, but this has not yet been explicitly explored.

Another factor that might influence the manner of motion depiction in comics is drawing style (Caglioti et al., 2009). However, no research has yet been done to find out the differences in motion depiction across different comic styles. Examples of common-used comic styles are manga, superhero, and cartoony. Manga are comics originating from Japan, containing lots of humor, satire, exaggeration, and animation. The popularity of manga has risen to such an extent that it has even been exported to other countries over the world, like Russia and the United States (Ito, 2005). In his article about the structure of Japanese manga, Cohn (2010) claims that manga often use motion lines, suppletion lines (e.g., when parts of the moving object or figure are replaced by lines), or circumfixing lines (e.g., lines surrounding the moving object or figure) to make readers feel that they are moving together with the object or figure in motion.

In addition to drawing style, publication date might also influence the way in which motion is conveyed in visual languages. It has been a challenge to depict motion in static images for decades long. Nonetheless, even the very first cartoons like Little Nemo (originated from 1911) and Krazy Cat (originated from 1913) used affixes like motion lines for depicting motion in its comics (Masuch, Schlechtweg, & Schulz, 1999). Research from Rosenblum, Saldaña, and Carello (1993) states that motion lines have become common in the 20th century. Even though affixing exists already for years, Potsch and Williams (2012) claimed that the art of motion depiction has progressed over the past years. Additionally, recent comic artists are able to draw motion with more vividness than comic artists from early comic history. Yet, this must be interpreted with some caution, since Potsch and Williams (2012) did not empirically test their statements. Another reason for recent comics to have more motion depicted than earlier comics, is the influence of manga on United States comics from the 80s. Manga has been launched in 1980 in the United States, but especially since 2002 the US manga market has been growing tremendously (Matsui, 2009).

Though some studies have examined path depiction in comics, no analysis has yet compared the variety of factors that might influence them, across global region, drawing style, language, or publication date. Equally important, existing literature on language typology and visual language mainly compared Japanese and American cultures. Cross-cultural studies around the world about motion depiction are therefore extremely limited. Both Hacımusaoğlu and Cohn (In preparation) and Tversky and Chow (2017) showed a possible impact of spoken languages on motion depiction. However, the current literature about motion depiction and language typology is largely based on one or sometimes two countries per typology, which means that much can still be clarified in this area. Besides, these studies did not take other factors into account that could possibly influence motion depiction. This creates space to investigate this in a broader perspective. Thus, in order to find out whether all mentioned factors may influence motion depiction in comics, the following research question is formulated:

RQ: *What factors influence the depiction of motion in comics?*

This study aims to examine differences in motion depiction in comics by analyzing a corpus of 60 comics from 6 different countries of origin. Based on previous findings about motion depiction across language typology, comic style, global region, and recency of publication, this study will test the following hypotheses:

H1: Comics from S-languages depict motion more explicitly than comics from V-languages

H2: Manga use more motion lines, suppletion lines, and circumfixing lines than other comic styles

H3: Comics from East Asia, Europe, and Africa depict more motion than comics from North America

H4: Comics with a recent publication depict more motion than comics with an older publication date

H5: Postural cues predict the amount of implicit paths

Methods

Materials

The corpus in this study consisted of 60 comics, with 10 comics analyzed from each of 6 different countries. Appendix A shows an overview of all comics that have been annotated for this study, and information about its title, author, publisher, and country of origin, genre, style, and publication date. The total corpus consists of 1.351 pages, with on average 22.52 (*SD* = 6.90) pages per comic. Comics from the following countries were analyzed: China, Japan, Nigeria, Russia, Spain, and United States. Within the corpus, 40 comics are originated from S-language countries (United States, Russia, China, Nigeria), while the other 20 comics are originated from V-language countries (Spain, Japan). The distribution of the countries ensured that the corpus included comics from the following four different global regions: Europe (Russia, Spain), East Asia (Japan, China), North America (United States), and Africa (Nigeria). To enable exploring the influence of comic style on motion depiction, the corpus includes several kinds of comic drawing styles. The most common drawing styles that were addressed in the study are manga and superhero. The publication date of the comics varies from 1947 until 2020, which enables to study the influence of comic recency on motion depiction. To ensure sufficient variety in the comics, all comics within the corpus are originated from 37 different publishers and, more importantly, from 56 different authors.

Each comic in the corpus can be categorized by multiple independent variables (e.g., a Russian manga comic from 2018 can be categorized in the factors language typology, publication date, global region, and drawing style). Therefore, this study looked for relationships between the different factors that can influence the dependent variables, to find possible moderators that influence other factors.

Areas of analysis

For the current study, comic books were annotated across various fields related to motion. Motion annotations were made using the software program MAST (Multimodal Annotation Software Tool) version 8 (Cardoso & Cohn, in preparation). This software program allows the annotation of things of interest, and creation of relations between them. As can be seen in Figure 1, the Annotations Editor provides the coder with multiple tools to draw regions around shapes in a document, like a comic page. After this, the coder can select the regions and annotate them in a particular category.

Figure 1. Screenshot from MAST's annotations page.

The coding process of the corpus included annotations of motion cues (e.g., affixes and postural cues), as well as figures and objects. Annotating the data was done by one coder who was trained on the relevant annotation fields and was not allowed to code the data before completing several protocols in MAST. All annotations were checked and discussed with other researchers and final annotations reflect the agreement between both the coder and other researchers. The analyzed data does not include data from training comics.

All panels and motion cues were annotated based on the MAST coding schemes VLT: Morphology: Motion Events (v.2) and VLT: Semantics: Path Structure (v.2). For this study, only the coding scheme about motion events was relevant. The motion events coding scheme comprises information about cues, shape, and quantity of lines. The following cues were included in the scheme: motion line, future line (e.g., indicating the future direction), circumfixing line (e.g., lines that circumfix the figure or object in motion), backfix line (e.g., lines in the background that indicate motion), postural cue, suppletion line (e.g., part of the moving object or figure is replaced by lines to indicate motion) , partial polymorphism (e.g., repetition of parts of a figure or an object), and impact stars (e.g., stars that indicate impact of a completed action). Shape of the cue was divided into impact star shape and line shape. Impact star shape distinguishes between radial lines (e.g., lines emanating from the center of impact) and an actual star shape, but was not addressed in current study. Line shape distinguishes line with the following shapes: straight, curved, twirl, spiral, circumfixing, arrow, and ribbon. Lastly, the lines were categorized into single lines, double lines, or several lines (everything over double lines). Regarding the path structure coding scheme, only explicit and implicit paths were relevant.

Annotators first decided whether a depicted path is implicit or explicit. Implicit paths were coded as ‘implicit’ on the mover itself, while explicit paths were coded as ‘explicit’ on an arrow drawn behind the mover, which represents the direction and length of its motion. All possible motion cues from the coding scheme were used in the annotation process. However, not all motion cues were used for the analysis. This means that there was more data gathered than required for this study, enabling future research to build on this study by using data that has not been analyzed yet.

The following motion cues are included in the analysis: motion lines, suppletion lines, circumfixing lines, and postural cues. Circumfixing lines occur when the lines surround the figure or object that is in motion (Figure 2a). Circumfixing lines are mostly used to indicate that something is moving implicitly, but do not show the direction of the motion. When suppletion lines are used, a moving object or figure is being replaced by motion lines, as can be seen in Figure 2b. Figure 2c shows motion lines, which indicate the motion by lines behind the object. Motion was coded as a postural cue when the posture of a person indicates motion, either with or without affixes (Figure 2d). The figures below contain title references to the comic of which the image was derived. References in more detail can be seen in Appendix A.

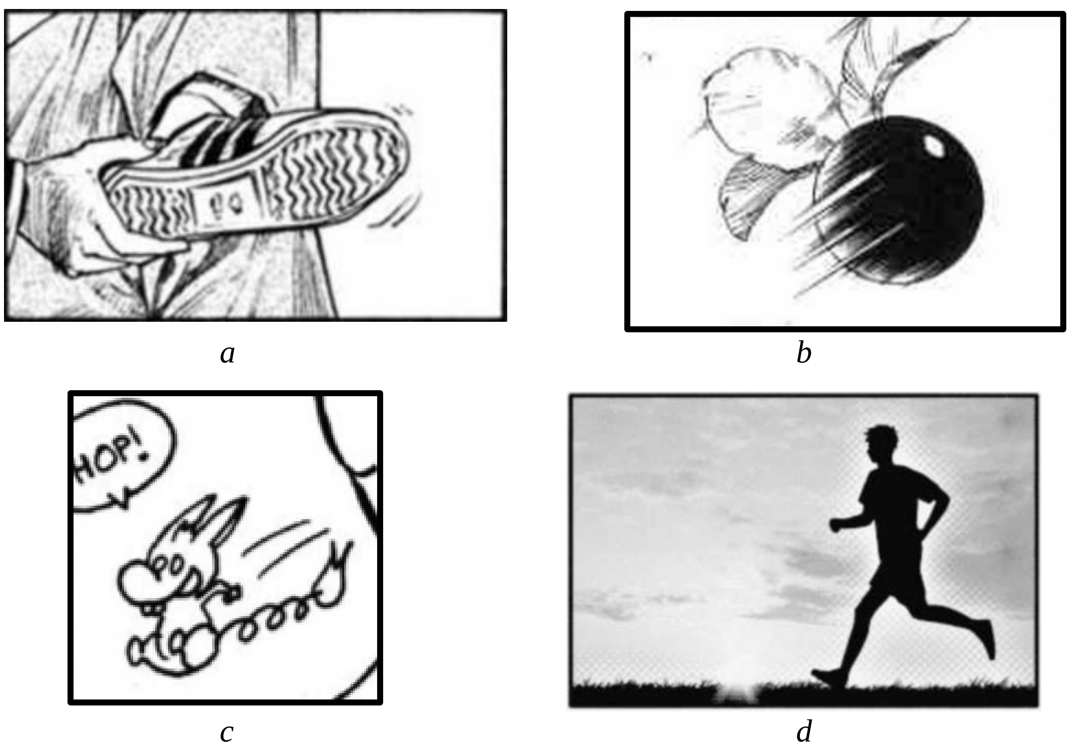

Figure 2. Motion cues displayed. *a*. Circumfixing lines, from ‘Real’. *b.* Suppletion lines, from ‘Ranma’. *c*. Motion lines, from ‘Islamundo’. *d.* Postural cue, from ‘First one’.

Motion lines were annotated more in depth than circumfixing lines, suppletion lines, and postural cues, since the quantity and the shape of these lines differ within motion lines. As suggested by Hayashi et al., (2012), motion lines can clarify the direction and speed of the motion, by using different shapes and quantities of lines. Besides, the number and shape of motion lines affects viewer's perception of motion. Therefore, current study analyzes which shape is used most frequently in comics, and how many lines the different countries use to indicate motion. Since there were some shapes of motion lines which did not occur much, I only included straight (*M* = .42, *SD* = .32), curved (*M* = .54, *SD* = .31), and ribbon lines (*M* = .18, *SD* = .25) in the additional analysis of line shape. Figure 3 shows an example of a ribbon line. The following lines were excluded from the analysis, because of their low occurrences: arrow (*M* = .01, *SD* = .05), spiral (*M* = .02, *SD* = .10), twirling lines (*M* = .01, *SD* = .04), and zigzag lines (*M* = .01, *SD* = .02). The displayed means are calculated out of total motion lines.

Figure 3. Ribbon, from 'Emperor Doom'.

Data Analysis

After annotating all comics, the data was exported into JASP (JASP Team, 2021). Data is first ordered and filtered by relevance to remove redundant data for this study and optimize the analysis process, before averaging the data out of pages. Data was analyzed either based on the mean occurrence per page for each motion cue or on the mean occurrence of a cue out of all cues. Pages were used as a divisor because of variation in the number of pages and panels per book, so that the sum of all occurrences is out of proportion. Some comic books use, for instance, more panels for the same information than other books. Therefore, this study looks at the proportion of the total amount of each motion cue out of the total number of pages. For analyzing the proportion of a specific motion cue within all motion cues, I averaged the occurrences of motion cues (motion lines, suppletion lines, circumfixing lines, postural cue) over the total number of motion cues. For analyzing the proportion of a specific shape or quantity of motion lines, I averaged the occurrences of line shape and quantity out of all motion lines.

In order to study the influence of the independent variables language typology (S-language, V-language), global region (North America, East Asia, Africa, Europe), publication date, and comic style (manga, superhero) on the use of motion cues (motion lines, suppletion lines, circumfixing lines, postural cue), implicit paths, and explicit paths, a Linear Regression analysis was performed. To enable the data to perform a Linear Regression analysis, the data about language typology, global region, and comic style was dummy coded. To do follow up test for each factor individually, either Repeated Measures ANOVAs or Independent T-Tests were conducted. For explicit and implicit paths, either Repeated Measures ANOVAs or Independent T-Tests are used, based on the number of factor levels. The influence of publication date on path explicitness and the use of motion cues was also tested through Pearson's Correlation tests. Linear Regression analyses were performed to find out what factors could be identified as predictors for implicit or explicit paths. An additional analysis investigated whether shape and quantity of the motion lines differ within the corpus through Repeated Measures ANOVAs, Linear Regression analyses, and Independent T-Tests.

Results

In order to find out what factors might influence motion depiction across comics, a Linear Regression was performed with language typology, global region, comic style, and publication date as factors, and explicit path, implicit path, and total motion cues as dependent variables. Publication date is added as a covariate in the analysis, but will also be addressed later, since publication date was also tested through a Correlation test.

The first regression analysis checked whether the above-mentioned factors influence explicit paths. This analysis showed that both comic style (b = -.25, β = -.27, t(55) = -2.24, p = .029) and publication date (b = -.01, β = -.34, t(55) = -2.53, p = .014) could possibly predict explicit paths in comics. The model explains 27% of the variance in explicit paths ($R2$ = .27, F = 4.96, p = .002). Language typology (b = -.07, β = -.05, t(55) = -.38, p = .703) and global region (b = .09, β = .12, t(55) =.87, p = .388) are no predictors of explicit paths.

Next, I used implicit paths as dependent variable for the Linear Regression analysis. This analysis showed that comic style (b = -.35, β = -.32, t(55) = -2.75, p = .008) as well as publication date (b = -.02, β = -.33, t(55) = -2.49, p = .016) could possibly predict explicit paths in comics. The model explains 30% of the variance in explicit paths ($R2$ = .30, F = 5.83, p < .001). Language typology (b = .08, β = .04, t(55) = .37, p = .710) and global region (b = .15, β = .16, t(55) = 1.23, p = .215) are no predictors of implicit paths.

Lastly, I tested whether the number of motion cues could be predicted by language typology, global region, comic style, and publication date. The Linear Regression analysis showed that either language typology (b = -.72, β = -.17, t(55) = -1.29, p = .204), global region (b = .45, β = .21, t(55) = 1.50, p = .139), comic style (b = -.24, β = -.09, t(55) = -.73, p = .469), or publication date (*b* = -.02, *β* = -.15, *t*(55) = -1.06, *p* = .295) could not predict the use of motion cues.

The previous tests showed what factors might, or might not predict implicit paths, explicit paths, or motion cues. However, there is still a lot to clarify. Below, I will elaborate on the follow up tests for each possible influential factor.

Language typology

The Linear Regression analysis already showed that language typology is no predictor of explicit paths, implicit paths, or motion cues. This indicates that language typology (S-language, V-language) does not impact how motion is depicted across comics. I hypothesized that comics from S-languages depict more explicit motion than comics from V-languages. With an Independent Samples T-Test, I compared the mean number of explicit paths between S-languages and V-languages. On average, V-language comics appear to have a comparable number of explicit paths per page (*M* = 1.34, *SD* = 0.97) as S-language comics (*M* = 1.08, *SD* = 0.60) (*Mdif* = 0.264, *t*(58) = -1.31, *p* = .20).

The Linear Regression analysis looked at all motion cues at the same time and did not find any evidence of language typology as a predictor of motion depiction. Even when I split up the motion cues into separate cues, I did not find any significant differences. I compared motion cues (motion lines, suppletion lines, circumfixing lines, postural cues) between S-languages and V-languages with a Repeated Measures ANOVA. I split up the motion cues, since it is expected that postural cues predict implicit motion (Hacımusaoğlu & Cohn, In preparation), and that the other motion cues predict explicit motion through the path. Figure 4 shows the distribution of each motion cue, sorted by language typology. There are no meaningful differences within the means of the language typology (*F* = .01, *p* = .94). Besides, the output showed no interaction effect between language typology and motion cues (F = .10, p = .96). Therefore, I can conclude that this study does not support the hypothesis (H1) that S-language comics depict more (explicit) motion than V-language comics.

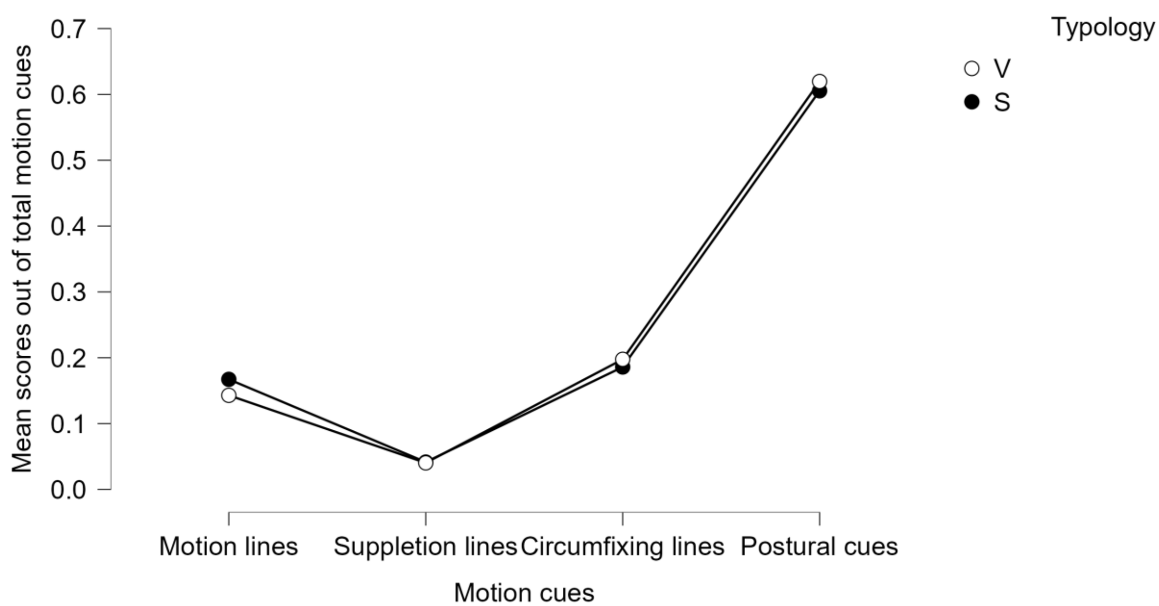

Figure 4. Means of separated motion cues out of total motion cues, distinguished by language typology.

When I omitted language typology and only looked at the motion cues separately, I did find some meaningful differences within the usage of motion cues. Figure 5 visualizes the difference in mean occurrences of each motion cue out of total motion cues. The difference within the cues is significant (F = 77.02, p = .001). In order to examine which differences are significant, I performed a Bonferroni post hoc test. Postural cues occurred more than motion lines (t = -11.92, p < .001, d = -1.55), suppletion lines (t = 15.04, p < .001, d = -1.96), and circumfixing lines (t = 11.07, p < .001, d = -1.45). Besides, circumfixing lines appeared more than suppletion lines (t = -3.93, p < .001, d = .51).

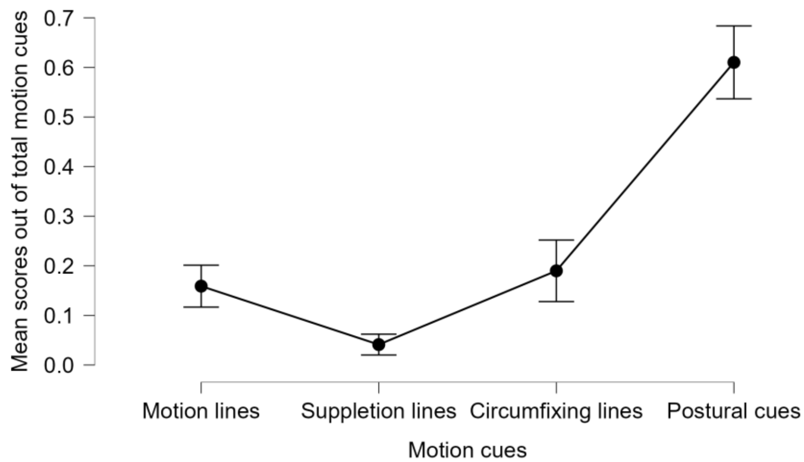

Figure 5. Means of separated motion cues out of total motion cues.

Comic style

Next, I performed follow up tests on the Linear Regression, which showed that comic style predicts both implicit and explicit paths. To do this, two Independent T-Tests were conducted with comic style (manga, superhero) both times as independent variable and implicit path and explicit path as dependent variables. These analyses both showed that superhero comics (M = 1.61, SD = .75) use more implicit paths than manga (M =.86, SD = .58) ($Mdif$ = 0.743, $t(44)$ = 3.78, p < .001), and that superhero comics (M = 1.30, SD = .66) use more explicit paths than manga (M = .91, SD = .44) ($Mdif$ = 0.394, $t(44)$ = 2.43, p = .019).

A Linear Regression Analysis already showed that comic style does not predict motion cues, but did not yet study the effect of comic style on the motion cues separately. Therefore, I tested the hypothesis that manga use more motion lines, circumfixing lines, and suppletion lines than other comic styles. A Repeated Measures ANOVA was conducted to test the hypothesis. Mean scores of motion lines, suppletion lines, and circumfixing lines, categorized by comic styles, can be seen in Table 1. The ANOVA indicated a significant difference in the use of motion lines, suppletion lines, and circumfixing lines (p < .001). In order to examine what this difference entails, a Bonferroni’s post hoc test was performed. This analysis showed that manga use more motion lines, suppletion lines, and circumfixing lines than superhero comics (t = 4.52, p < .001, d = .64), indicating that the hypothesis (H2) is supported.

Table 1

Means of motion lines, suppletion lines, and circumfixing lines, grouped by comic style

	Motion lines		**Suppletion lines**		**Circumfixing lines**	
	Manga	**Superhero**	**Manga**	**Superhero**	**Manga**	**Superhero**
Mean	0.196	0.137	0.052	0.044	0.295	0.091
Std. Deviation	0.181	0.098	0.077	0.079	0.235	0.103

Most of the manga in the corpus comes from Russia or Japan. In order to study whether the results of comic style on motion cues are consistent between those countries, additional Independent T-Tests are conducted. This analysis showed no differences in the usage of motion lines (t = -1.23, p = .235), suppletion lines (t = .09, p = .933), circumfixing lines (t = -.75, p = .462), and postural cues (t = 1.87, p = .078). Also explicit path (t = -.14, p = .892), implicit path (t = .03, p = .973), and total cues (t = -.35, p = .732) gave no significant differences.

Global region

Then, I analyzed the impact of global region on the amount of motion cues that are used in the comics. The Linear Regression already showed that global region is no predictor of explicit paths, implicit paths, and motion cues. This section examines whether there are differences between the continents concerning path explicitness or motion depiction. I hypothesized that comics from East Asia, Europe, and Africa depict more motion than comics from North America. To test this, I performed a 4x4 Repeated Measures ANOVA with global region (Africa, East Asia, Europe, North America) as independent variable, and cues (motion line, suppletion line, circumfixing line, postural cue) as dependent variable. Figure 6 shows the distribution of means of the motion cues per page, divided by global region.

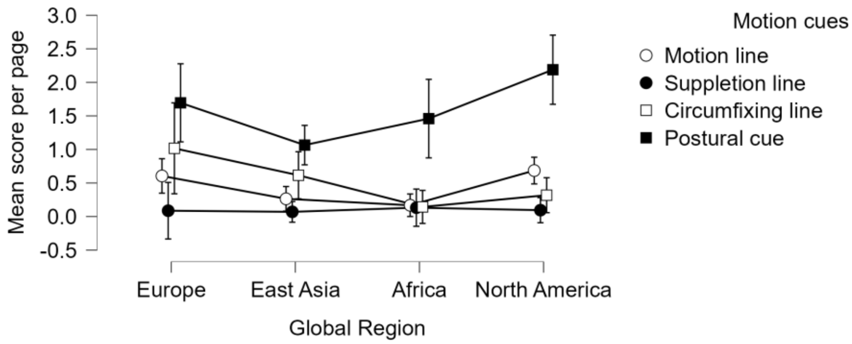

Figure 6. Means of motion cues per page, grouped by global region.

An interaction effect was found for global region and motion cues (F = 2.08, p = .034). The only significant result from Bonferroni's post hoc analysis is that North American comics uses more postural cues than the ones from East Asia (t = -3.53, p = .044). Besides that, no differences have been found between continents. Figure 7 contains the mean distribution of total cues among Africa, East Asia, Europe, and North America. Although Europe has the highest mean of total cues (M = 3.40, SD = 2.97), the differences between global regions are not significant (F = 2.52, p = .07).

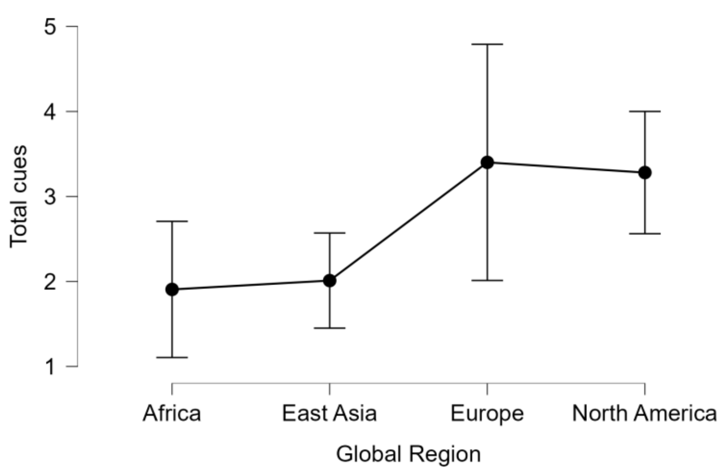

Figure 7. Means of total motion cues per page, grouped by global region.

Next, I analyzed the differences in path explicitness by global region with a Repeated Measures ANOVA. Explicit and implicit paths were both used as dependent variable, and global region as independent variable. Table 2 shows the means of explicit and implicit paths per continent, indicating that North America contains both most explicit and implicit paths. No interaction effect has been found between path explicitness and global region (F = 1.54, p = .21). What I did found, is a significant effect on global region (F = 4.91, p = .004). This showed that comics from North America contain more implicit motion than comics from East Asia (t = -4.14, p = .002). This, together with the above-mentioned results, means that the hypothesis (H3) is not supported and that comics from East Asia, Europe, and Africa do not depict more motion than comics from North America.

Table 2

Means of explicit and implicit paths, grouped by global region

Explicitness	**Global Region**	**Mean**	**SD**
Explicit path	Africa	1.035	0.653
	East Asia	0.833	0.404
	Europe	1.354	0.974
	North America	1.569	0.585
Implicit path	Africa	1.197	0.678
	East Asia	0.815	0.513
	Europe	1.372	1.084
	North America	2.016	0.602

Publication date

The next analysis is about the impact of publication date on the average amount of motion cues per page that are used in the comics. The Linear Regression analysis suggested that publication date is a significant predictor of both implicit and explicit paths. To examine in what way publication date predicts motion depiction, I performed follow up tests. Based on previous findings in the literature, I hypothesized that comics with a recent publication date are more likely to have their motion more depicted than comics with an older publication date. To test this, a Pearson's Correlation test was conducted, which revealed a negative relationship between publication date and total motion cues (Pearson's r = -.29, p = .024). As opposed to what was hypothesized, this result implies that if the publication date gets more recent, the average amount of motion cues per page gets less. This can also be seen in Figure 8. However, only 8.41% of the variance in motion cues was accounted by publication date. Important to note is that there is one comic from by far the oldest publication date (1947), and with by far the most cues per page. When redoing Pearson's Correlation without this outlier, that can be seen on the left in Figure 6, the negative correlation is not significant anymore (Pearson's r = -.19, p = .014).

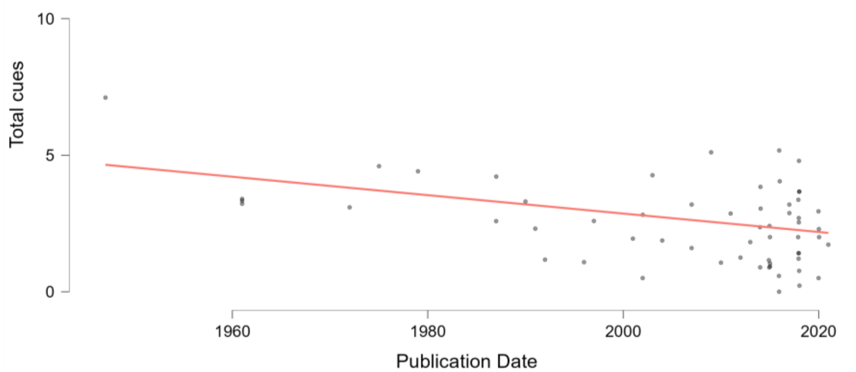

Figure 8. Means of total cues per page, distributed by publication date.

Because previous literature suggests that recent comic artists depict motion with greater vividness than earlier comics, I also expect that more recent comics depict their motion more explicitly. Nevertheless, a negative relationship appeared between publication date and explicit paths (Pearson's r = -.41, p = .001). Figure 9 shows that if the publication date gets more recent, the average amount of explicit paths per page gets lower. Only 17.14% of the variance in explicit paths was accounted by publication date. Because both the effect of publication date on average motion cues per page and explicit paths per page are in contrast with what was expected based on the previous literature, H4 is not supported.

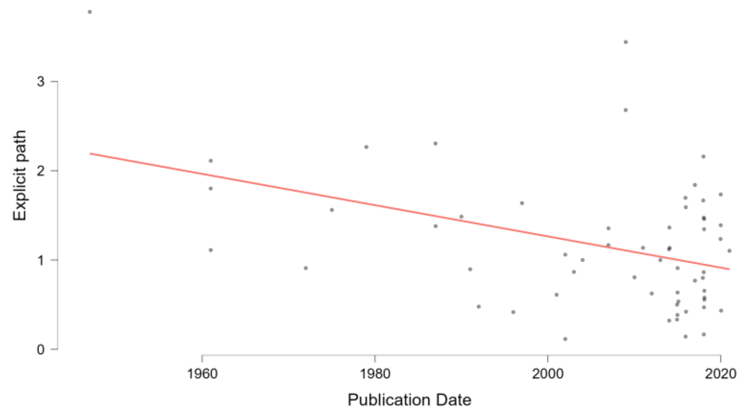

Figure 9. Means of explicit paths per page, distributed by publication date.

Additional analyses

Regardless of above-mentioned factors that could possibly influence motion depiction across comics, this study also looks at differences in path explicitness and motion cues.

Path explicitness

To examine which factors might predict implicit or explicit paths, Linear Regression analyses were performed. First, I investigated whether motion lines, suppletion lines, or circumfixing lines predict explicit paths. This analysis showed that explicit paths can only be predicted by motion lines (b = 1.05, β = .63, $t(56)$ = 5.34, p < .001), and not by suppletion lines (b = .13, β = .03, $t(56)$ = .27, p = .787) and circumfixing lines (b = .01, β = .07, $t(56)$ = .19, p = .850). The model explains 41% of the variance in explicit paths ($R2$ = .41, F = 13.13, p < .001). Then, I investigated which shape and quantity of motion lines predicts explicit paths. Motion lines, the predictor variable, are distinguished by straight (M = .17, SD = .21), curved (M = .24, SD = .28), ribbon (M = .10, SD = .16), single lines (M = .03, SD = .06), double lines (M = .13, SD = .21), and several lines (M = .22, SD = .27). The regression analysis showed that an explicit path can be predicted by both straight motion lines (*b* = 2.54, *β* = .71, *t*(53) = 2.19, *p* = .033) and single lines (*b* = -3.26, *β* = -.28, *t*(53) = -2.04, *p* = .046), but not by ribbons (*b* = .44, *β* = .09, *t*(53) = .61, *p* = .54), curved lines (*b* = 1.28, *β* = .48, *t*(53) = 1.21, *p* = .230), double lines (*b* = .44, *β* = .12, *t*(53) = .49, *p* = .626), or several lines (*b* = -1.41, *β* = -.50, *t*(53) = -1.28, *p* = .208). The model explains 59% of the variance in explicit paths (*R2* = .59, *F* = 12.70, *p* < .001). A visualization of the regression analysis of straight lines can be seen in Figure 10. When removing the outlier that can be seen in the graph, the regression loses its significance (*b* = .82, *β* = .20, *t*(55) = 1.43, *p* = .16), and straight lines are no longer a predictor of explicit motion. On the other hand, removing the outlier ensures ribbons to be a significant predictor of explicit motion (*b* = 1.19, *β* = .28, *t*(55) = 2.22, *p* = .031).

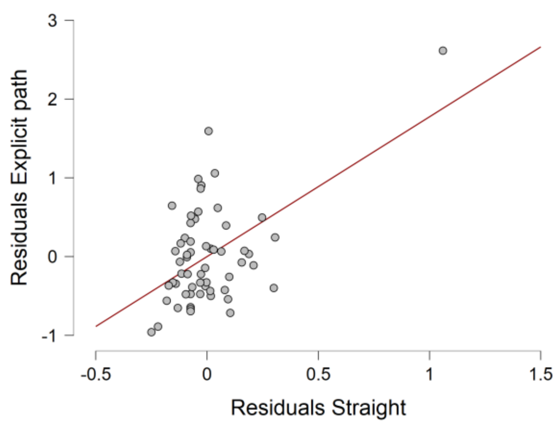

Figure 10. Regression analysis of explicit path and straight line shape.

Next, I tested the hypothesis that an implicit path could be predicted by postural cues. To do this, I again performed a Linear Regression analysis. Implicit path (*M* = 1.26, *SD* = .87) was the outcome variable, with postural cue (*M* = 1.53, *SD* = 1.12), motion lines (*M* = .43, *SD* = .45), suppletion lines (*M* = .09, *SD* = .16), and circumfixing lines (*M* = .62, *SD* = .16) as possible predictors. The regression analysis showed that an implicit path can only be predicted by postural cues (b = .68, β = .88, *t*(58) = 11.86, *p* = .001). The model explains 76% of the variance in implicit paths ($R2$ = .76, F = 190.42, p < .001). This means that the hypothesis (H5) is supported, and that postural cues successfully predict implicit paths.

Motion lines

Shape of motion lines

Shape of motion lines is often used to determine the direction of the motion. To find out which shape of motion lines were used the most, a Repeated Measure ANOVA was performed. Figure 11 shows the distribution of the mean occurrences out of all motion lines. The cumulative number of these three means is above 1, since some motion lines were indicated as, for instance, both ribbon and curved. The difference in line shapes is significant (F = 14.88, p = .001). To statistically test what the differences are between the motion lines, I performed a Bonferroni post hoc test. This test showed two meaningful differences. Firstly, curved motion lines are used more than ribbon motion lines (t = 5.36, p < .001, d = .73), and secondly, straight motion lines are used more than ribbon motion lines (t = 3.55, p = .001, d = .49). There exists no difference between curved and straight lines (t = -1.18, p = .07, d = .25). Besides, no significant interaction effects have been found on motion line shape grouped by typology, comic style, global region, or publication date.

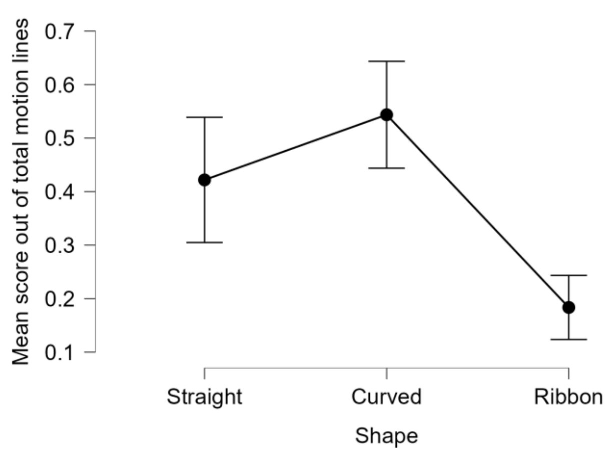

Figure 11. Means of motion line shapes out of total motion lines

Quantity of motion lines

Quantity of lines is often used to determine the size or speed of the moving object or figure. Single, double, and several lines were distinguished as categories. When comparing the means of those three categories, most comics use several lines to indicate motion. This difference can be seen in Figure 12. The difference between the motion line quantities is significant ($p < .001$). To find out what these differences entail, I performed a Bonferroni post hoc test. This showed that several lines are used more than double lines ($t = -4.81$, $p < .001$), and single lines ($t = -6.73$, $p < .001$). Both differences have a large effect size (respectively: $d = .66$, $d = .93$). Also for quantity of lines, no meaningful interaction effects were found on quantity of lines grouped by typology, comic style, global region, or publication date.

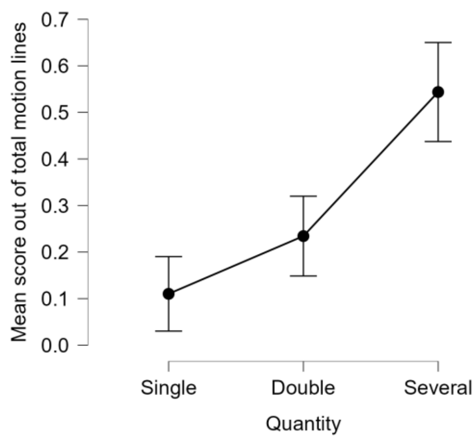

Figure 12. Means of motion line quantities out of total motion lines.

Discussion

This thesis aimed to examine how language typology, publication date, global region, and comic style may influence how comics convey motion. Therefore, I analyzed a corpus of 60 comics from 6 different countries. I mainly found that postural cues predicted implicit paths, and that manga used more motion lines, suppletion lines, and circumfixing lines than superhero comics. Below, I will further discuss the predictions with the outcomes, and elaborate on potential implications of this study.

First, I examined whether there is a difference in motion cues and path explicitness regarding language typology. Previous literature suggested that comics from S-languages contain more path salience and depict more motion than comics from V-languages. Nevertheless, the results showed no differences. The Linear Regression analysis showed that language typology could not be labeled as predictor of motion depiction. Besides, V-language and S-language comics appeared to have comparable numbers of explicit paths and motion cues. These findings contrast the statements of Tversky and Chow (2017), who claimed that S-language comics contain more explicit motion compared to V-language comics. I elaborate on a possible cause for this below.

Based on the study of Cohn (2010), I hypothesized that manga use more motion lines, suppletion lines, and circumfixing lines than superhero comics. In line with the hypothesis, the data showed that manga indeed contain significantly more motion lines, suppletion lines, and circumfixing lines than superhero comics. However, these results in combination with those on language typology must be interpreted with some caution. Out of the total corpus, 20 comics come from V-languages, and 40 comics come from S-languages. One of the two countries that has been included as V-language comic in this corpus, is Japan. This study suggest that manga convey significantly more motion than superhero comics, and manga is originating from Japan. Apart from one comic, all Japanese comics within this corpus can be classified as manga. Hence, this could imply that Japan one of the two V-language countries in the corpus is accountable for the unforeseen results on language typology. This is amplified by the finding that there are no differences in motion depiction between Russia and Japan, which is likely because both countries have manga as comics style. In the end, the distribution of S-languages and V-languages in the study may have limited the results comparing language typologies. Therefore, future language typology studies should include a larger sample with more countries and an equal number of S-languages and V-languages in the corpus. Also, this study did not take relationships like source – route – goal into account. As the study of Hacımusaoğlu & Cohn (In preparation) suggests, especially routes are more depicted in S-languages compared to V-languages. Therefore, future studies could test whether language typology is a more successful predictor of the number of routes in a comic, compared to the amount of motion cues and explicit paths.

I also aimed to examine motion depiction differences between global regions. Cohn's (2017) study did not find any meaningful differences in path salience and motion events between global regions, while Tversky and Chow (2017) found that Eastern comics contain more motion than Western comics. Due to these findings, I hypothesized that comics from East Asia, Europe, and Africa depict more motion than comics from North America. In contrast to the hypothesis, this study did not show differences in motion depiction between continents. When splitting up all motion cues and comparing the differences between global regions, I can only conclude that comics from North America contain more postural cues than East Asia. This is consistent with the finding that North America contains most implicit motion of all global regions, while East Asia contains the least. It also coheres with our fourth hypothesis, which stated that postural cues predict implicit paths. This study showed that 76% of the implicit paths can be predicted by postural cues. In line with these findings, Hacımusaoğlu & Cohn (In preparation) claimed that postures convey motion info implicitly, without having data such as this study. Therefore, current study found the first empirical evidence for postural cues being a predictor of implicit paths.

The next analysis examined the impact of publication date on the amount of motion cues used in the comics. The hypothesis that comics with a recent publication date are more likely to have their motion more depicted than comics with an older publication date, was based on the study of Potsch and Williams (2012), which claimed that recent comic artists draw motion with more vividness compared to comic artists from early comic history. Despite its convincing claim, I interpreted it with some caution, since Potsch and Williams (2012) did not empirically test their statements. I found a negative correlation on publication date and motion cues, which suggested that the more recent the books were published, the fewer motion cues are used on each page. Therefore, the hypothesis was not supported. A possible reason for this could be that the corpus was skewed in terms of publication date (z-score skewness = -5.52). On average, the comics come from 2005, while the oldest comic comes from 1947, and the newest from 2021. In contrast to our predictions, the oldest comic contained most motion of all comics included in the corpus, which makes it look like motion depiction is decreasing over the years. However, when I removed this comic, no significant correlation was found. So even without the oldest comic, the hypothesis would not have been supported. To rule out the confound of skewed data, further studies on the impact of publication date on motion depiction could gather comic data equally distributed by publication date. As been stated in the study of Rosenblum, Saldaña, and Carello (1993), the use of motion lines has been common in comics across the 20^{th} century. Early cartoons like Little Nemo (1911) and Krazy Cat (1913) used motion lines to convey motion in its comics (Masuch, Schlechtweg, & Schulz, 1999), suggesting that artists at the time were already conveying motion vividly. Therefore, future studies could further investigate the impact of publication date on motion depiction by compelling a corpus which is evenly distributed, starting before the 20th century and ending in the present.

Lastly, I performed some additional, exploratory analyses on the usage of motion cues and the distribution of path explicitness over all 60 comics. Because postural cues predicted implicit paths, I also examined possible predictors of explicit paths. This analysis showed that motion lines successfully predict an explicit path. When splitting up the motion lines in shapes and quantities (straight, curved, ribbon, single lines, double lines, several lines), I found that explicit paths could be predicted by both straight motion lines and single lines. This might imply that single lines predict the explicitness of motion, while double or several lines predict the speed of motion. However, this cannot be concluded with current data, so it has to be investigated by future studies. Straight motion lines being a predictor for explicit paths must be interpreted with some caution, since straight lines as predictor loses its significance when removing the outlier, while in turn, ribbon gets significant as predictor for an explicit path.

In terms of motion cues, postural cues are by far the most used cues over all comics, while suppletion is used the least. Bonferroni's post hoc analysis showed that curved motion lines are used most, followed by straight motion lines. No interaction effects have been found by typology, comic style, global region, or publication date on shape of motion lines. When it comes to quantity of motion lines, there is a clear distribution in the number of motion lines. Several lines are used by far the most, followed by double lines, which means that single lines are used the least. Also for line quantity, no meaningful interaction effects have been found by typology, comic style, global region, or publication date. Hayashi et al. (2012) suggests that longer and more lines indicate faster motion. Because I found that several lines are clearly used most within the corpus, future research could use an experiment to investigate whether motion with more and longer lines is perceived as faster motion. Consequently, it could be investigated whether fast motion (e.g., jumping) uses more and longer motion lines than slow motion (e.g., walking).

Above-mentioned suggestions could also be tied to explicit paths. Current study investigated the use of explicit paths, and what possible predictors it could have. What this study did not investigate, are the differences within explicit paths. The corpus contained some difference in reading orders. Some comics are drawn from left to right, while others are drawn from right to left, like Japanese comics. This raises the question about whether comics that are drawn from a certain order, also depict their motion in that same order. Furthermore, since MAST enables the coder to draw an arrow to indicate an explicit path, it would be interesting to look at the length of these paths, and whether it differs across comics.

Even though many interesting insights have been gained by analyzing the corpus, there are still some remaining questions that this thesis could not answer. It is probable that the results on language typology are moderated by comic style, since manga comics (Russian, Japanese) convey most motion. I already found that there are no significant differences in motion depiction between Russian and Japanese comics, which might be caused by the fact that both countries use the same style. As a result, data on language typology could be unreliable since comics from Russia (S-language) and Japan (V-language) are both drawn in Japanese manga. Therefore, future research could follow up this study by using bigger corpus, focused on at least Russian and Japanese manga, but maybe also United States manga, to investigate whether manga comics are consistent in depicting motion.

Overall, this analysis provided additional clarity to how comics convey motion. There are indeed various factors that influence how motion events are depicted. These factors, in combination with all motion cues, affect a reader's comprehension of motion in comics. This raises the question whether readers of different types and origins of comics might interpret motion in different ways, based on what patterns they are exposed to. Many psychological studies of motion cues in comics do not take the influential factors of motion depiction into account, while actually they should. Perhaps the horizon should be broadened, and future studies must look at more factors that can influence motion depiction, instead of just one. In other words, this study is important for the understanding of visual language, since it shows that there could never be only one factor that could be held accountable for showing certain results.

References

Bohnemeyer, J., Enfield, N. J., Essegbey, J., Ibarretxe-Antunano, I., Kita, S., Lüpke, F., & Ameka, F. K. (2007). Principles of event segmentation in language: The case of motion events. *Language*, *83*(3), 495–532. https://doi.org/10.1353/lan.2007.0116

Caglioti, V., Giusti, A., Riva, A., & Uberti, M. (2009). Drawing Motion without Understanding. In: Bebis G. et al. *Advances in Visual Computing*, vol 5875, 147–156. https://doi.org/10.1007/978-3-642-10331-5_14

Cardoso, B. & Cohn, N. In preparation. The Multimodal Annotation Software Tool (MAST). Unpublished manuscript.

Cohn, N. (2010). Japanese visual language: The structure of manga. *Manga: An anthology of global and cultural perspectives*, 187-203.

Cohn, N. (2018). Combinatorial Morphology in Visual Languages. *The Construction of Words*, 175–199. https://doi.org/10.1007/978-3-319-74394-3_7

Cohn, N., & Maher, S. (2015). The notion of the motion: The neurocognition of motion lines in visual narratives. *Brain Research*, *1601*, 73–84. https://doi.org/10.1016/j.brainres.2015.01.018

Cohn, N., Murthy, B., & Foulsham, T. (2016). Meaning above the head: combinatorial constraints on the visual vocabulary of comics. *Journal of Cognitive Psychology*, *28*(5), 559–574. https://doi.org/10.1080/20445911.2016.1179314

Cohn, N., Wong, V., Pederson, K., & Taylor, R. (2017). Path salience in motion events from verbal and visual languages. In *CogSci*.

Rosenblum, L. D., Saldaña, H. M., & Carello, C. (1993). Dynamical constraints on pictorial action lines. *Journal of Experimental Psychology: Human Perception and Performance*, *19*(2), 381–396. https://doi.org/10.1037/0096-1523.19.2.381

Friedman, S. L., & Stevenson, M. B. (1975). Developmental Changes in the Understanding of Implied Motion in Two-Dimensional Pictures. *Child Development*, *46*(3), 773. https://doi.org/10.2307/1128578

Hacımusaoğlu & Cohn (2021). Linguistic Typology of Motion Events in Visual Narratives. Unpublished manuscript.

Hayashi, Hiromasa, Goh Matsuda, Yoshiyuki Tamamiya & Kazuo Hiraki. (2012).Visual effect of "speed lines" in manga an experimental study on spatial attention. Cognitive Studies, 20 (1), 79-89. https://doi.org/10.11225/jcss.20.79

Geisler, Wilson S. (1999). Motion streaks provide a spatial code for motion direction. Nature, 400 (6739), 65-69. http://dx.doi.org/10.1038/21886

JASP Team (2021). JASP (Version 0.16) [Computer software].

Jovanović, J., & Kentfield, M. (1998). Manifold manner: An exploratory analysis of French and English verbs of motion. *Unpublished paper, Department of Psychology, University of California, Berkeley*.

Ito, K. (2005). A History of Manga in the Context of Japanese Culture and Society. *The Journal of Popular Culture*, *38*(3), 456–475. https://doi.org/10.1111/j.0022-3840.2005.00123.x

Masuch, M., Schlechtweg, S., & Schulz, R. (1999). R.: Speedlines: Depicting motion in motionless pictures. *In: Proceedings of SIGGRAPH 1999. Computer Graphics Proceedings, Annual Conference Series, ACM, ACM Press/ACM SIGGRAPH*.

Matsui, T. (2009). The diffusion of foreign cultural products: The case analysis of Japanese comics (manga) market in the US. *Unpublished Manuscript. Princeton University*. Online at www.sfu.ca/cmns/courses/2011/488/1-

Özçalışkan, Ş., & Slobin, D. I. (1999). Learning how to search for the frog: Expression of manner of motion in English, Spanish, and Turkish. In *Proceedings of the 23rd annual Boston University conference on language development* (Vol. 2, pp. 541-552). Somerville, MA: Cascadilla Press.

Potsch, E., & Williams, R. F. (2012). Image Schemas and Conceptual Metaphor in Action Comics. *Linguistics and the Study of Comics*, 13–36. https://doi.org/10.1057/9781137004109_2

Slobin, D. I. (2000). Verbalized events: A dynamic approach to linguistic relativity and determinism. In S. Niemeier & R. Dirven (Eds.), Evidence for linguistic relativity (pp.107-138). Amsterdam: John Benjamins

Slobin, D. I. (2003). Language and thought online: Cognitive consequences of linguistic relativity. In D. Gentner & S. Goldin-Meadow (Eds.), Language in mind: Advances in the study of language and thought (pp. 157-192). Cambridge, MA: MIT Press.

Talmy, Leonard. (1985). Lexicalization patterns: Semantic structure in lexical forms. Vol.III: Grammatical categories and the lexicon. In T. Shopen (Ed.), Language typology and syntactic description. (pp. 57–149). Cambridge: Cambridge University Press.

Tversky, B., & Chow, T. (2017). Language and Culture in Visual Narratives. *Cognitive Semiotics*, *10*(2). https://doi.org/10.1515/cogsem-2017-0008

Appendix A: Comics

Comic Title	Author	Publisher	Country of origin	Genre	Style	Publication date
Princess Frog	Ksenia M Belka	Comics Factory	Russia	Romance	Manga	2018
Pirozhki (Grandmother's pies)	Sideburn004	Silent Manga Audition, Comics Factory	Russia	Slice of life	Manga	2018
The Gift of Goddess Ai	Lina & Yu	Silent Manga Audition, Comics Factory	Russia	Fantasy, slice of life	Manga	2018
First One	Amito Arai	Silent Manga Audition, Comics Factory	Russia	History	Manga	2018
Once upon a tale	Sideburn004	Comics Factory	Russia	Fantasy	Manga	2018
Yakutia	Bogdan Fedotov	Istari Comics, Bubble	Russia	Fantasy	Manga	2016
Bonding	Lumarin, MarinaPRIV	Comics Factory	Russia	Drama	Manga	2015
Anime Nyash	Alexey Kuryatnikov	Comics Factory	Russia	Comedy	Manga	2016
Inspiration	Dzikawa	Self-manga	Russia	Drama, romance	Manga	2015
Path to the Future paved with memoria gems	Hetiru, Semkul	Self-manga	Russia	Fantasy	Manga	2016
Fly+ The Song of frogs	张晓雨(Zhang Xiao Yu)	生活·讀書·新知三聯書店	China	Fantasy	Cartoony	2014
The Night of Ghosts	钱妤 （Qian Yu ）	personal account	China	Horror	Manga	2010
Night bus	Zuo Ma (左马）	Drawn & Quarterly	China	Folktale	Cartoony	2018
Cuisine Chinoise	早稻 （Zao Dao)	Dark Horse Books	China	Folktale	Cartoony	2018
A Restaurant Nearby	咬人 (Yao Ren)	personal account	China	Folktale	Manga	2014

14 days in the desert	劉拓 / 徐子然 / 森雨漫 （Liu Tuo/ Xu Zi Ran/Senyu Studio）	浙江工商大学出版社	China	Adventure	Cartoony	2021
Legend of Tianma	楚觅 （Chu Mi ）		China	Fantasy	Manga	
Evolution: The Epic of Earth	吕玻 （Lv Bo）		China	Fantasy	Manga	
Raven Forest	Written by 鹿一舟 （Lu Yizhou,） Drawn by 马欣然 （Amber Ma ）		China	Fantasy	Cartoony	2020
Chinese Queer	阿切 （Seven）	Éditions Sarbacane	China	LGBTQ	Manga	2020
El Capitán Coraje 11 El fin de un esbirro	G. Iranzo	Ediciones Toray, S.A.	Spain	Adventure		1947
Ardalén	Miguelanxo Prado	Norma Editorial	Spain	Fantasy		2012
AS – El arte de volar	Antonio Altarriba	Ediciones de Ponent	Spain	Costumbrist		2009
El violeta	Juan Sepúlveda Sanchis, Antonio Mercero	Drakul	Spain	LGTB		2018
El Faro	Paco Roca	Astiberri Ediciones	Spain	Autobiography		2004
La casa de los susurros	David Muñoz, Tirso Cons	Yermo Ediciones	Spain	Terror		2011
Ken Games 1 Piedra	José Robledo y Marical Toledano	Diabolo Ediciones	Spain	Thriller		2009
1714 Baluarte	Cels Piñol and Àlex Santaló	FanHunter	Spain	Historical adventure		2014

Islamundo – Primera temporada	Dapz (David Pérez Gutiérrez), Jotadé (Jesús Daniel Fernández)	Revista Exégesis	Spain	Action		2015
Caminantes	Pedro Lobato	Revista Exégesis	Spain	Adventure		2013
Way of the Rat	W: Chuck Dixon, A: Jeff Johnson	CrossGen Comics	United States	Martial arts Fantasy	Superhero	2002
Danger Girl	Jeff Campbell	Image Comics	United States	Action Adventure	Superhero/ Manga	1997
Doc Savage	W: Doug Moench, A: John Buscema & Tony DeZuniga	Magazine Management Co.	United States	Action Adventure	Superhero	1975
Savage Dragon	Erik Larsen	Image Comics	United States	Superhero	Superhero	2014
Spawn	Todd McFarlane	Image Comics	United States	Superhero comics	Superhero	1992
Star Wars Annual	W: Chris Claremont, A: Mike Vosburs& Steve Leialola	Marvel Comics	United States	Sci-Fi	Superhero	1979
Strange Adventures: War with the Giant Frogs	W: Gardner Fox, A: Sid Greene	DC Comics	United States	Sci-Fi	Superhero	1961
Strange Adventures: The Invisible Space-Dog	Gil Kane	DC Comics	United States	Sci-Fi	Superhero	1961
Strange Adventures: The Toy Solider War	Carmine Infantino	DC Comics	United States	Sci-Fi	Superhero	1961
Akira	Otomo Katsuhrio	Kodansha	Japan	Sci-Fi	Realistic	1987

Anne Freaks	Yua Kotegawa	Kadokawa Shoten	Japan	Horror	Manga	2002
Drifting Classroom	Kazuo Umezu	Shogakukan	Japan	Horror	Manga	1972
Eden: It's an Endless World!	Hiroki Endo	Kodansha	Japan	Sci-Fi	Manga	2007
Fullmetal Alchemist	Hiromu Arakawa	Square Enix	Japan	Sci-Fi	Manga	2007
Ghost in the Shell	Masamune Shirow	Kodansha/Titan Books	Japan	Sci-Fi	Manga	1991
Missing Piece	Hisaya Nakayo	Hana to Yume Comics	Japan	Romance	Manga	1996
Naruto	Masashi Kishimoto	Shueisha	Japan	Adventure	Manga	2001
Ranma 1/2	Rumiko Takahashi	Viz Media	Japan	Action humor	Manga	1988
Real	Inoue Takehiko	Shueisha	Japan	Drama	Manga	2003
Amazing Tek Kids	Alexander “Rudeworks” Ighoja (also artist); (Creator: Peter Daniel)	Peda Comics		superhero		
Avonome - The Realm Within	Mr Xavier Ighorodje (Creator/artist: Stanley Stanch Obende)	Comic Republic		superhero		2015
Black Sage - The Rising	Bill Bidiaque (Creator: Sola Adebayo)	Boxtout Creative Studio		superhero		2015
Chayoma (Curse of the Jangura)	Peter Chizoba Daniel, Isaiah Ovie Gibson (illustrators: Jimmy King, Ape Ekene Polycap)	Peda Comics		superhero		2020
Di Iche - Naija Anomaly	Peter Chizoba Daniel (artist: Nwankwor Newman)	Peda Comics		superhero		2018

Eru (Pestillence of the Night)	Tobe "Max" Ezeogu (Artist: Ozo Ezeogu)	Comic Republic		superhero		2015
Hero Kekere (Prime Edishun)	Cassandra Mark (Artist: Kelechi Isaac)	Comic Republic		superhero	Cartoony	2018
Chronicles of the Newborn - Rise of Mlezi	Adeniji Jr (Creator/Art: Peter Daniel)	Peda Comics		superhero		2017
ShowDown - Chaos Rising	Alexander “Rudeworks” Ighoja (also artist)	Peda Comics		superhero		2018
Tatashe	W; Cassandra Mark, A: Tobe Max Ezeogu	Comic Republic	Nigeria	Fantasy	Cartoony	2018
Emperor Doom	W: David Michelinie, A: Bob Hall	Marvel Comics	United States	superhero comics	Superhero	1987