

Language in Game Rules and Game Play: A Study of Emergence in Pandemic

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Abstract

Language and games are both creative activities that can exhibit unexpected behaviors and meanings. Previous studies in the connections between games and language have focused on digital games. The current study investigated the emergence of language in a modern cooperative board game (Pandemic) and used discourse analysis tools to compare and contrast the textual rule book and oral discussions in observed gameplay in terms of speech acts and vocabulary. Unexpected language did emerge in the gameplay, and in general, the longer text and sentences of the rulebook contained more academic vocabulary, and the shorter game play language contained more slang and expressives. Limitations of the study are elucidated and suggestions for future research and uses of analog games for learners of foreign languages are offered.

Keywords: creativity, emergence, discourse analysis, speech acts, board game, English as a second language

1. Introduction

1.1 Creativity in Language Use and Game Play

Language use is a creative activity. As shown by Chomsky's (1988, 2002) extensions of Descartes' work on this subject, we can produce and understand an unlimited number of sentences that have never been created before (unboundedness), we can create meaning without needing objects in the environment to relate to (stimulus freedom), and our creative sentences typically fit (have coherence with) our new circumstances. Chomsky (1965) viewed creativity as "an essential property of language [in that it] provides the means for expressing indefinitely many thoughts and for reacting appropriately in an indefinite range of new situations (p. 6);" we can use our language abilities creatively to not only transmit information to others, but also express our feelings, or express ideas to give others feelings as well.

Playing games is also very creative; players invent and test complex strategic ideas based on simple guiding rules. A single game, such as one game of chess between a brother and a sister, though based on the rules that millions of other players use for the same game, might proceed in a way unlike any other game of chess played in history; this phenomenon is called "emergence" in games. Campbell (1982) stated that it is a game's set of rules that creates the stage for emergence to happen and Salen and Zimmerman (2003) write about how even a simple set of rules can lead to complex possibilities and unpredictable results; even the traditional 3x3 grid of Tic-Tac-Toe has over 50,000 ways of a game proceeding (Holland, 2000). Holland introduced board games as an example of not being able to predict moves and strategies in a game only by analyzing its pieces and rules; "the whole is indeed more than the sum of its parts" (p. 14). Salen and Zimmerman argued that emergence is important for gamers and games and gameplay; emergence has the effect of making a game system more meaningful for players. Emergence can occur not only in the actions players take, but in the language players use during a game (for example, strategizing about the game or chatting about something completely unrelated). This research project examined players' creative and emergent use of language while playing a modern board game, Pandemic.

1.2 Related Research

Ensslin's (2012) linguistic case studies highlight numerous discursive tendencies in the language of gaming, based on a specialized corpus of about 280,000 tokens of oral and written language produced by gamers and video game journalists. Ensslin's work demonstrates the importance and range of language used within games by designers (e.g., rules, instructions and stories), by players while gaming (e.g., joking, strategizing), and by players and

journalists about gaming (e.g., re-telling, evaluating), and reinforces related findings on language use in games (Steinkuehler, 2006) and language use in internet-based gaming hobbyist groups (Gee, 2003; Thorne, Black & Sykes, 2009). Ensslin analyzed her corpus to check how and where occurrence and recurrence of particular linguistic features would happen as gamers and people in the gaming industry convey meaning to others and build identities and communities. She found an interesting pattern in the appearance of high-frequency words in the general keyword list in the language of gaming; many keywords (the top of 30 keywords of her corpus, GameCorp) belong to the semantic field of video games itself: 'game(s),' 'gaming,' 'gamer,' 'multiplayer,' 'online,' 'play' and 'player.' Transcriptions of laughter also occurred frequently in GameCorp, for example, 'you,' 'lol,' 'haha,' 'hahaha.' 'really,' 'just,' 'like' and 'you' are lexemes frequently used in general spoken language (Ensslin, 2012, p. 76-80).

Ensslin's studies also showed the diversity of words used in games and metagame discourse, specifically jargon, slang, composites, shifts, shortenings, blends, new creations, affixes, blendings, clippings, compoundings, shifts and metaphors. Jargon might be called gamer language. It is the expression of a technical term that a particular expert uses to communicate with fellow thinkers. Slang resembles jargon in meaning, but slang is a wider concept, and there are many words that anyone knows, whereas jargon is limited to words known only in a limited community, for example, 'Triple Banana' is a tool used in Mario Kart DS (Ensslin, 2012, p. 66). Composites combine several things. For example, 'Dragonica,' consists of 'dragon' and the suffix "-ica" which means a continent. Shifts have undergone changes in meaning, for example, 'awful.' Shortenings dropped parts of their original form or the word has been constructed from initials, such as 'BBQ.' Loans have been borrowed from other languages. Blends are created by combining and shortening other words. For example, 'vodcast' consists of video and podcast. New creations are 'words that do not have any links with existing words, [and] are often used to name new objects, activities, virtual or abstract phenomena' (Ensslin, 2012, p. 70), for example, 'Wii.' Acronyms and initialisms are closely related. Both use only initials to make a new word, for example, 'PSP' (PlayStation Portable). Affixes change meaning and sometimes its word class, for example, 'gamer' (game + -er). Blending are words which are comprised of parts from two other words, for example, 'Wiimote' (Nintendo Wii + remote control). A clipping is a shortening to reduce concepts to what is mostly only one syllable, for example, 'fan fic' (from fan fiction). Compounding is formed by the root of more than two words, for example, 'Gameboy.' Semantic and functional shifts change its original meaning and adopts a new meaning, for example, 'boss' (Ensslin, 2012, p. 73). Metaphors have a function to replace things with words to suggest a more concrete image, and to express ideas more briefly in figurative language, for example 'they [the other gamers] can't possibly be good enough to *beat* me' (Ensslin, 2012, p. 75).

Playing games often takes place between two or more people, and video games often have conversations between characters, so speech act research (Searle, 1969) helps to classify these pragmatic interactions, and to understand the connections between an interlocutor's linguistic choices and the social context. Ensslin (2012) provides numerous examples of speech acts from gamer language. Representatives are used when a speaker insists on a proposition being the truth, for example, 'Blizzard has certainly written a fascinating world' (Ensslin, p. 89). Directives assume some sort of action on the part of the other party, for example, 'Stop it! Just let me have a goal!' (p. 89). Commissives are used by speakers to commit to future actions, for example, 'You know I'm not gonna speak to you for the rest of the day' (p. 89). Expressives convey attitudes and feelings, for example, 'Oh, for god's sakes' (p. 90). Declarations require particular institutional roles and abilities, for example, the ability to "declare war or disband a guild" (p. 90). Ensslin provides numerous examples to show that "the language of gaming features all classes of speech acts" (p. 90) and that directives and representatives seem to be the most common speech acts in gaming discourse since these speech acts "communicate roles, enable gameplay and construct gameworlds" (p. 90).

Because this research project compared the written language of rule books with spoken language of gameplay, a brief discussion of the typical differences between oral and textual language is relevant. Chafe and Tannen (1987) and Halliday (1989) provide thorough overviews. Typically, written language is more formal, compact and explicit. It is well-ordered and presented in a more sophisticated way and makes use of higher level vocabulary and ideas. Written language can have repeated editing and it also gives more time for the audience to decipher it. It tends to exhibit greater levels of lexical density. Spoken language is dynamic and immediate, so it has lower precision than the written language though its flexibility is high. Many slang words are used in spoken language and this may not be appropriate in written language. Also, a lot of abbreviated forms are used by speakers, for example, "I'll" or "don't." Furthermore, spoken language can be given meaning and expression in a variety of words by adding a gesture or changing the tone of voice, volume, or rhythm. Spoken language can be used in various ways to communicate with the listener. Although the characteristics of spoken and written language use while and about

gaming has been investigated by Ensslin (2012) and Shelton and Wiley (2007), these studies dealt primarily with digital gaming; other genres of games and gaming, for example, board and card games with rulebooks, cards and extensive face to face communication have yet to be investigated.

2. Method

2.1 Research Design

We explored emergence in language and gameplay with a popular modern cooperative board game, Pandemic. The research questions for our study were:

- 1) How does the discourse of a board game's rulebook and spoken play compare and contrast?
- 2) What language emerged in the spoken discourse around gameplay?
- 3) What types of words and speech acts appeared in the rulebook and gameplay?

2.2 Participants

Four university students participated in this game (three undergraduates and one graduate student). There was one female and three males. The participants were between 20 and 25 years of age ($M = 21.75$ years of age). There was one Indonesian and three Japanese players.

The participants had spent between nine and seventeen years studying English. Three people had taken a TOEIC test ($M = 690$). The participants self-rated their English skills to be about the same as other students in the same grade. The averages of their ratings (on a scale from 1 being "much worse" to 4 being "much better") were as follows: Reading: $M = 2.75$, Writing: $M = 3.0$, Listening: $M = 3.0$, Speaking: $M = 3.0$, Grammar: $M = 2.25$, Vocabulary: $M = 2.5$.

Two participants had spent some time in an English-speaking country; one participant had stayed in Australia for three days and one participant had stayed in the United States for seven days. The students had studied English in school between one to three hours each week ($M = 1.75$ hours per week). The students studied English outside of university by watching movies, reading comics, reading articles, listening to music, playing video games, watching comedy shows using YouTube, reading English vocabulary books on the train and reading sports news. Some of the English difficulties the students reported were related to grammar, vocabulary, reading, and listening. All participants had played a game before this study ($M = 15.25$ years of playing). Three players owned board or card games such as othello, The Game of Life, shogi and Yu-Gi-Oh. They thought about board or card games in the following ways: "A creation for having fun and killing time, filled with some enjoyment," "A way to cut myself away from ordinary life," "It's an unusual thing, a good way to get rid of the stress of a dull life," "They give me enjoyment, they are fun," and "It's useful to make or maintain friendships." Their favorite games were Monopoly, the Pokemon card game and Yu-Gi-Oh. The participants self-rated their game skills to be about the same as other students in the same grade. The average of their ratings (on a scale from 1 being "much worse" to 4 being "much better") was 2.5. When they played a game, they reported they thought: "I'm the happiest boy on earth, I loved games at first sight and have passion to beat challenges," "To waste time," "They are exciting, I can forget something bad," and "They are interesting, to make or maintain friendships." None of the participants had played Pandemic before this project.

2.3 Game

Pandemic (Leacock, 2008) was the game used in this project. This game has won many international design prizes. Boardgamegeek.com offers a succinct description of gameplay:

In Pandemic, several virulent diseases have broken out simultaneously all over the world! The players are disease-fighting specialists whose mission is to treat disease hotspots while researching cures for each of four plagues before they get out of hand. The game board depicts several major population centers on Earth. On each turn, a player can use up to four actions to travel between cities, treat infected populaces, discover a cure, or build a research station. A deck of cards provides the players with these abilities, but sprinkled throughout this deck are Epidemic! cards that accelerate and intensify the diseases' activity. A second, separate deck of cards controls the "normal" spread of the infections. Taking a unique role within the team, players must plan their strategy to mesh with their specialists' strengths in order to conquer the diseases. For example, the Operations Expert can build research stations which are needed to find cures for the diseases and which allow for greater mobility between cities; the Scientist needs only four cards of a particular disease to cure it instead of the normal five—but the diseases are spreading quickly and time is running out. If one or more diseases spreads beyond recovery or if too much time elapses, the players all lose. If they cure the four diseases, they all win! (Boardgamegeek.com, 2015)

This is a truly cooperative game where players all win or players all lose and should discuss each action players take in order to succeed. It can be played by two to four players aged 13 and up. This game's rules are somewhat complicated ("medium-light to medium" weight, as rated by board game players on boardgamegeek.com).

2.4 Setting

The game was played in a private commonly used University research room. The players seemed very relaxed. It was the first time for all of the players to play Pandemic.

2.5 Procedure

A. Preparation; a game was chosen

Pandemic (Leacock, 2008) was chosen because of its cooperative gameplay (presumably leading to a lot of discussion for the purposes of this project), its high ranking on boardgamegeek.com, its commercial success and its winning of several international gaming awards.

B. Introduction about the project

Participants gathered in the room, they were thanked for joining the project, and the project's purpose was explained.

C. Explanation of the game's rules

An HD video recorder and an iPad audio recording app were started, then a Japanese language supplementary guide to the game rules was handed out, and then the game rules were explained in Japanese.

D. Participants played the game

The game was set up, participants practiced the game in Japanese for several turns, then the participants played the game in English and were sometimes advised in English (only when there were rules questions), and they played until the game ended in a defeat (due to too many viral outbreaks in the game). The rules were not changed. They played for 45 minutes and there was constant conversation and cooperation.

E. Impression

Following gameplay, a brief discussion of their experience and impressions of the game was held.

2.6 Data Analysis

The recorded conversation was transcribed and verified by two additional persons (one native English speaker and one native Japanese speaker). This project used discourse analysis techniques (Edge, 1993; Sugiura, 1998) to understand the emergence of spoken language during play, the speech acts used in play, and the differences between the written rules for the game and the spoken language during play. This study is based on Ensslin's work and we worked to avoid common problems that happen in discourse analysis (Antaki, Billig, Edwards & Potter, 2007). In addition to reading and selecting words and sentences from the transcript and textual rulebook, the following free web tools were also used for the analysis: Web Vocab Profiler Classic v4 <http://www.lextutor.ca/vp/eng/> (to analyze the frequencies of various levels of English words) and Lexicool http://www.lexicool.com/text_analyzer.asp (to perform numerous textual analyses such as complexity and sentence lengths).

3. Results

3.1 Research Question 1: How Does the Discourse of a Board Game's Rulebook and Spoken Play Compare and Contrast?

As can be seen from Table 1, the rulebook contained 1721 more words than the gameplay. One reason for this is that the game is very complicated. Many steps and instructions are listed in the rulebook. Many long, dense and complex sentences are written in the rule book, for example "If a cure for a given disease has been discovered and all of the disease cubes of that color have been removed from the board flip the cure marker for the disease to the 'sunset' side", but the player remarks in the gameplay were mostly simple and short, for example: "I go to Seoul." "This card." "Here." "You can cleanup." And there are many instances of short counting in gameplay, such as: "One, two, three."

Table 1. Word count

Rule book	Gameplay
3403 words	1682 words

As can be seen in Table 2, the rulebook contained a slightly higher percentage of K1, K2, and Academic Word List words than the spoken language during gameplay. The gameplay discourse contained more off-list words, especially expressives.

Table 2. Types, percentages and top words

	Rule book	Gameplay
K1 Words	77.20%: to(119), numbers(115), of(86), a(79), and(67)	76.34%: you(67), this(51), to(47), and(46), one(46)
K2 Words	8.75%: cards(66), card(38), pile(31), disease(26), cure(16)	6.48%: card(19), cards(11), clean(9), medic(8), cure(6)
AWL Words	4.66%: research(20), role(9), adjacent(8), team(8), corresponding(7)	2.32%: area(15), construct(7), research(6), researcher(4), job(2)
Off-List Words	9.40%: cubes(29), discard(24), Brian(22), cube(20), pawn(20)	14.86%: yeah(22), ah(20), it's(20), okay(20), don't(8)

K1 words are the list of the 1000 most frequent words of the GSL (The General Service List of the most frequent English words). The rulebook contained 0.86% more K1 words than the gameplay. Players often used the word “you” in gameplay when giving orders to others. For examples: “You are the scientist again should I move to here or stay in that area.” “You can cleanup this area.” Many numbers are used in the rulebook.

K2 words are the second 1000 words of the GSL. The rulebook contained 2.27% more K2 words than the gameplay. “Card” is used frequently in both game play and the rule book. Many cards are used for this game. The description of each card is written in the rule book. In addition, medical care-related words such as “disease” or “cure” appear quite frequently in the K2.

AWL Words refers to the Academic Word List. The rulebook contained 2.34% more AWL words than the gameplay. “Research” appears frequently in both the rulebook and gameplay. This game uses a ‘research station’ piece.

Off-List Words do not appear on the other lists. The gameplay contained 5.46% more Off-List words than the rulebook. “Brian” is frequent in the rulebook and is an example player name. A lot of words signifying agreeable responses are used in gameplay. Many of the items in the rulebook Off-List words are closely tied to the game while gameplay Off-List words are discussions about the game.

As can be seen in Table 3, the rulebook had more, and more types of words than the gameplay. The rule book also contained longer sentences on average. The lexical density and complexity of the texts were quite similar but the gameplay discourse was slightly more dense and complex. The gameplay had more but shorter sentences with shorter words on average. The longest sentence in the rulebook was “If a cure for a given disease has been discovered and all of the disease cubes of that color have been removed from the board flip the cure marker for the disease to the ‘sunset’ side” and the longest gameplay sentence was “You can make a vaccine but you need a ticket to come back to...so we have to put something here.” The shortest sentence in the rulebook was a heading (“Components”) and the shortest sentence in the gameplay was “Medic.”

Table 3. Comparison of rule book and gameplay language

	Rule book	Gameplay
Words in text (tokens)	3403	1682
Different words (types)	592	319
Lexical density (content words/total)	0.58	0.6
Anglo-Sax Index	71.61%	75.28%
Greco-Lat/Fr-Cognate Index	28.39%	24.72%
Complexity Factor	18.4%	20.8%
Readability (Gunning-Fog Index) (6-easy 20-hard)	7.2	2.1
Total Number of Characters	18978	9149
Average Syllables per Word	1.58	1.42
Sentence Count	239	413
Average Sentence Length	14.84 words	4.18 words
Max Sentence Length	36 words	21 words
Min Sentence Length	1 word	1 word
Readability (Alternative) beta (100-easy 20-hard, optimal 60-70)	58.1	82.8

3.2 Research Question 2: What Language Emerged in the Spoken Discourse Around Gameplay?

Numerous words, expressions and sentences in the gameplay discourse were very different than the rulebook text. The following are two examples of emergent language in the gameplay that seem to have been created from players' culture and prior knowledge that were triggered by elements and events in the game.

Example 1: Player 1 pulled the card for Osaka and said "okonomiyaki." Okonomiyaki, a cabbage pancake, is a famous food in Osaka, Japan. He associated a famous food with the city name written on the card and used it in the gameplay discourse. This emergence of language is an example of what Chomsky referred to as "stimulus freedom;" no specific reference to the food exists in the game rules or components yet the player produced this term. This language item may have some connection to some of the players' identities as Japanese nationals and citizens; the word may have been used to provide context or deeper meaning for a city in the game that the players may feel, or want to feel, more connections with in the game (they did not offer examples of Chinese or Mexican dishes even though cities in those countries were also named).

Player 1: Karachi and Manila, Osaka!

Player 2: Osaka!

Player 1: Okonomiyaki.

Player 2: Okonomiyaki.

Example 2: After seeing an outbreak occur in the game, Player 1 compared the activity to how a nuclear bomb explodes. This is an example of the "coherence" in language creativity. Unlike the food reference in Example 1, Player 1 in Example 2 is using language to refer to a phenomenon in the game that all of the players can see and understand – the spread and growth of disease cubes to neighboring cities. The player's language does not only serve a descriptive function, but might also function in a "metaludic" sense (Ensslin, pp. 105-113) to demonstrate the player's understanding of the situation and his ability to talk strategically about the game; the language can also be seen in relation to his power and identity (as a knowledgeable leader or play-maker in the group).

Player 1: Again?

Player 3: Outbreak outbreak.

Player 1: One here.

Professor: Ah, okay.

Player 2: Okay.

Player 1: Now it's like a nuclear system.

3.3 Research Question 3: What Types of Words and Speech Acts Appeared in the Rulebook and Gameplay?

As can be seen in Table 4, the most frequent words (in total, just nouns, and just verbs) were dissimilar, with only three words (to, and, turn) appearing on both the rulebook and the gameplay lists.

Table 4. Frequencies and top words

	Rule book	Gameplay
Frequency and Top 5 Words (All)	the (9.5%) to (3.6%) of (2.6%) a (2.4%) and (2%)	you (4%) this (3%) to (2.7%) one (2.7%) and (2.6%)
Frequency and Top 5 Words (Nouns)	cards (1.7%) player (1.5%) city (1.1%) card (1%) infection (0.9%)	you (4%) one (2.7%) two (2%) I (2%) three (1.8%)
Frequency and Top 5 Words (Verbs)	discard (0.7%) draw (0.7%) add (0.5%) turn (0.5%) move (0.3%)	make (0.9%) go (0.8%) have (0.7%) turn (0.7%) use (0.6%)

A large number of jargon and slang appeared in both the rulebook and gameplay, such as: black region, Outbreaks Marker, Outbreaks Indicator, Infection Rate Marker, Infection Rate Track, Cure Markers, Cures Discovered Area, Infection cards, Infection Draw Pile, Disease cubes, Special event, Red lines, Red disease. Many composites were also found in these discourses, such as: eyeballs, cleanup, something, nothing, disappear, together, overtake, clockwise, unused, discard, outbreak, knowledge, everywhere. Many affixations were used, such as: freedom, mathematics, victory, cooperation, disappear, epidemic, discover, individual, player, cooperative, wisely, deadly, random, research, available, researcher, operation, harder, closer, unused, republic, improve, dispatcher, remove.

The loanword “pinch” emerged in the gameplay. Pinch means “to squeeze” in English, but means “a dangerous situation” (a kind of clipping from “to be in a pinch”) in Japanese. The metaphor “nuclear system” also emerged. After seeing an outbreak occur in the game, Player 1 compared the activity to how a nuclear bomb explodes. The clipping “math” was found in the gameplay (“math” being an abbreviated form of “mathematics”).

Many representatives were used in the rulebook to tell the truth of the game to players through explanations of various rules. These are examples of representatives from the rulebook: “Players collectively win the game immediately when the cures for all four diseases (Blue, Yellow, Black, and Red) have been discovered.” and “Players do not need to administer cures to every infected city in order to win the game - victory is instant when any player discovers the fourth and final cure.”

The rulebook contained some directives such as “Move your pawn to an adjacent city” and “Draw 3 cards” but gameplay contained many more, such as “Move to China?” and “Cleanup.” and “Work harder.” and “You go to go back to research station and make vaccine.” and “Soldier, work!” and “Don’t this card, blue cards.” and “You should make a station in blue area.” and “Do your job.” Pandemic is a cooperative game, so instructions or requests to other players often occur in the gameplay.

Commissives in the rulebook explain to readers some of the events that are expected during the course of a game. Players discourse during gameplay included conversation that predicted future events in the game. Examples of commissives in the rulebook are: “Your team will travel across the globe, stemming the tide of infection and developing the resources you’ll need to discover the cures.” and “Each of you will assume a unique role within the team, with special abilities that will improve your team’s chances if applied wisely.” and “If you and your team aren’t able to keep the diseases contained before finding the necessary cures, the planet will be overrun and the game will end in defeat for everyone.” and “If the number of outbreaks ever reaches 8 (and the Outbreaks Marker reaches the skull symbol), the game immediately ends in defeat for all players.” Examples of commissives during gameplay were: “Maybe we stay, me, we should stay closer to make vaccine.” and “I should wait for her to make bases.” and “He will do with four cards.” and “If you come to Seoul without using this card. You can give it to me and you’re here.” and “If you go home next, in your next time you can jump to here.” and “If something happen we can like this. I have five and I have to move back to the station so I can make cure.” and “Player 4, next turn you will go to Osaka.” and “They won’t disappear.” and “If any more red cards come, they don’t go on the board.” and “If you this, this, this this...you win the game.” and “If you get rid of all of them, then no more will be added.”

Only the gameplay discourse, because of its oral nature, contained expressives, for example “Oh..huh!” and “Oh!” and “Ah...”

4. Discussion

In this study, creativity and emergence (Campbell, 1982; Chomsky 1988, 2002; Holland, 2000; Salen & Zimmerman, 2003) were observed in both the gameplay and the related language of the players; actions and language that were not explicitly contained in the rulebook occurred often. The shuffling of the cards leading to random events and the particular actions of the players surely created a singular game experience that could not have been predicted just from reading the rulebook. Much of the language in the gameplay (i.e., words regarding cuisine and the technical reference) was also unpredictable and emergent in nature, and demonstrated the coherence and stimulus freedom that creative language in gameplay can exhibit, though the sentences given in the paper are too short to state with confidence that they were unbounded (never uttered before).

Similar to Ennslin’s (2012) studies, even though she analyzed 184 texts and we only analyzed two texts, the current study also found numerous instances of jargon, slang, composites and affixations in the game rules and play. Loan words and metaphors and clippings were more present in gameplay than in the rule text. All of the speech acts (Searle, 1969) Ennslin refers to were also found in the current study, with more representatives used in the rulebook in order to explain truths to the players, and more directives were found in gameplay since players needed to give advice in the collaboration with other players. Commissives were found in both the rulebook and gameplay, but they were more numerous in gameplay; the cooperative nature of the board game required planning, predictions, conditional statements and hypotheses regarding future actions and outcomes. Expressives were only found in the gameplay, not the rulebook, because of the interpersonal and emotional nature of the language expressing reactions to game events.

The data in this study support Chafe and Tannen’s (1987) and Halliday’s (1989) discussions of the differences of spoken and written discourse; our spoken data was overall simpler than our written data. The rulebook in this study (written language) contained more academic (i.e., sophisticated) vocabulary, and the gameplay (spoken language) used more Offlist words (e.g., slang). The readability of the text was slightly more difficult than the gameplay discourse, which is consistent with earlier research. The rulebook used longer sentences, on average, and required more words to explain the rules of the game. The game rules are very complicated and many steps and instructions are required in the rulebook. The gameplay discourse had higher frequencies of both personal pronouns and numbers. Additionally, the spoken language in the gameplay was given additional meaning through gestures, voice tone, volume and rhythm, which a textual rulebook cannot and does not need to utilize. Written language is formal, so the words of the rulebook were not able to convey the thought and the feeling of the designer as well as the gameplay language conveyed the thought and feeling of the players. One interesting difference between our data and prior research on spoken and written language is that the lexical density of the rulebook and gameplay discourse were very similar; this may be due to the particular writing style of the publisher (specifically targeting a general audience to make the game more understandable and popular).

5. Conclusion and Implications

The board game used in this study offered the participants the opportunity to be creative both linguistically and strategically. Analysis of the discourse of the textual rulebook and oral communication of gameplay showed a range of vocabulary (general, academic and game-specific) and the texts, overall, conformed to typical characteristics of spoken and written discourse. The game (the rulebook and the gameplay) demonstrated all

speech acts, as Ensslin stated, with the gameplay discourse containing more slang and expressives.

The generalizability of the results of this study may be somewhat limited due to the fact that the data is based on only one play of the game. Through repeated plays, the players may grow more accustomed to the rules and actions in the game, and the emergence of language may increase as the players continue to play with language and the other players, or decrease as not as much discussion may need to take place. It would be interesting to compare the conversation of players playing for the first time and the conversations in successive plays. This might be an additional way to explore emergence in gameplay and language. The linguistic data is based on non-native English speaking participants; the data of native English speakers might be much different in terms of level and type of vocabulary and length of sentences and types of speech acts. Additional research should investigate effects of repeated plays, different levels of familiarity between participants, and of course many different types of board games to discover larger patterns of language emergence.

Pandemic, both the rules and the gameplay, may be very useful for high school or university level language students (other language versions of the game are available). Players can learn geographic and professional language from this game in addition to techniques for cooperation. It is a relatively short (less than an hour-long) cooperative game that makes players work together towards a shared purpose. There may be much more talk time and communicative practice in a cooperative game than in a competitive game. Pandemic gives each player the role of an expert with distinct special abilities which encourages players to talk together to solicit opinions and make requests of other members; all of the players have many opportunities to speak. Because there are no fixed phrases that are specified for the gameplay, players can freely talk and there are many chances for enjoyable emergence in language and gameplay to occur. Language students can study both casual spoken and formal written language by analyzing the rulebook language and reflecting on language in gameplay. If they do so, they can be exposed to a large amount of varied and multi-level vocabulary and speech acts and be able to express ideas and emotions through gameplay. Pandemic's rulebook has nearly optimal readability so it may be an ideal game for language students to try first. Once students are familiar with Pandemic, they might try playing with new friends, then moving on to different cooperative games or games of different genres. Teachers who want to use Pandemic in the classroom should first understand the rules of this game very deeply because students may ask a lot of questions. It may also be useful to provide students with a supplementary guide written in both the first and second language. Through careful teaching and reflective play, students may enjoy learning both the language of the unchanging rulebook and participating in the infinite emergence and creativity of language and play.

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