Spontaneous Backstory Creation

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Abstract

The ability to spontaneously construct narrative representations of others is an example of how predictive processing models can have implications for research in social cognition. In this study, subjects were given images or brief text excerpts of various people and asked to come up with a backstory for each. Responses were analyzed for length, structure, and source material. After analysis, cartoon images were found to elicit more evaluative clauses in their responses. Also, items that included text excerpts elicited responses that were of the narrative type most frequently. Subjects used people from their own lives as well as characters from fictional works as material when crafting their stories. The results of this study have implications for the study of fiction's impact on cognition. Also, the neuroscience of such representations and clinical applications are discussed.

Introduction

Imagine you're walking down a deserted street one afternoon when you see in the distance a man walking toward you with a strange, limping gait. It looks to you like he might be injured, so you walk a bit faster toward him to help. But a thought occurs to you that causes you to slow your step. Whatever injured him could still be there. It sort of looks like he's trying to get away. Maybe he was stabbed or shot, and a gunman is about to come around the corner behind him. As he gets closer though, you realize his strange gait is because of a prosthetic left leg, that's mostly hidden under his khaki pants. He has tan skin, and also a blue Hawaiian shirt on with small white sailboats on it. As you pass by, he glances at you and smiles. You wonder what happened to his leg. You imagine that he was sailing his small catamaran on a sunny day in the Caribbean when he decided to drop anchor in a bay and go for a swim. Unfortunately, a hungry barracuda was swimming through the area and smelled him, promptly biting off his leg and dragging it down to the black depths. No, you think, he probably lost his leg in combat in Afghanistan or Iraq, and just has a shirt with sailboats on it for no particular reason other than he likes it.

In this excerpt, we were presented with a new person. We projected multiple stories onto him in order to put him into a context. As the man came into view, more information came to light and the story was updated. Some of these stories were more likely to be true than others, but all of them served the purpose of trying to reconcile an anomaly in experience.

We deal with many ambiguous things in our daily lives, but other people are by far the most unpredictable. The brain fills in the gaps of our experience, all the way down to our optic blind spot. Gaps in our knowledge of other people could be thought of in a similar way. When we first meet someone, they are completely unpredictable to us. We want to understand their unobservable characteristics, traits, motives, goals, and needs. We might use small clues in order to construct a story around them. This story could be partially correct or completely wrong. But putting someone into the context of a story allows us to begin to understand them, predict their behavior in the future, and act accordingly.

Could this story creation be an automatic process? Does it result in a representation being stored in the brain that guides our relation toward people?

Those questions might be beyond the scope of this paper, but the specific questions that this paper explores are related to the creation of these backstories spontaneously in an artificial setting. Provided pictures and illustrations of random people, are people able to readily come up with backstories? What clues will people use in order to create the story? Do people tend to come up with whimsical or realistic stories? Relatedly, what source material do people use? Familiar people from their own life? Characters from movies, novels, mythology? Do people have conscious access to the material they draw from when creating a story like this? To what extent are these stories fully fleshed-out narratives, versus fragments of narratives mixed with general impressions?

In the course of this paper, I'll try to map out a rough sketch of these representations that I believe play a crucial role in our social cognition. I'll also discuss how these representations might fit into a predictive processing framework, and what we currently know about the neurological picture. I'll report an experiment that is meant to reveal the nature of these representations. At the end, I'll discuss the implications of understanding how the media we consume affects our relations with people in the world, as well as possible clinical applications.

Background

Predictive Processing Framework

An increasingly accepted view in the cognitive sciences sees the brain's purpose as supporting perception and action by generating top-down predictions that attempt to "explain away" incoming sensory information (Clark, 2013). Critically, the generative models are thought to be nested in a hierarchical manner, with more complex representations (stored in the associative cortical areas) being used to predict combinations, or sequences, of lower-level representations (Figure 1). As the bottom-up sensory information travels up through the hierarchy, successfully predicted information will be "explained away" while information that isn't predicted will adjust the generative models themselves. This serves to make them more accurate for next time. A hierarchy of this type has been extensively and impressively mapped out for the visual system (Marr, 2010), but it's been suggested that this framework for cortical function extends above rudimentary visual objects to complex representations such as actions, action patterns (Schank & Abelson, 1977), or narratives (Mar, Peterson & Hirsh, 2013).

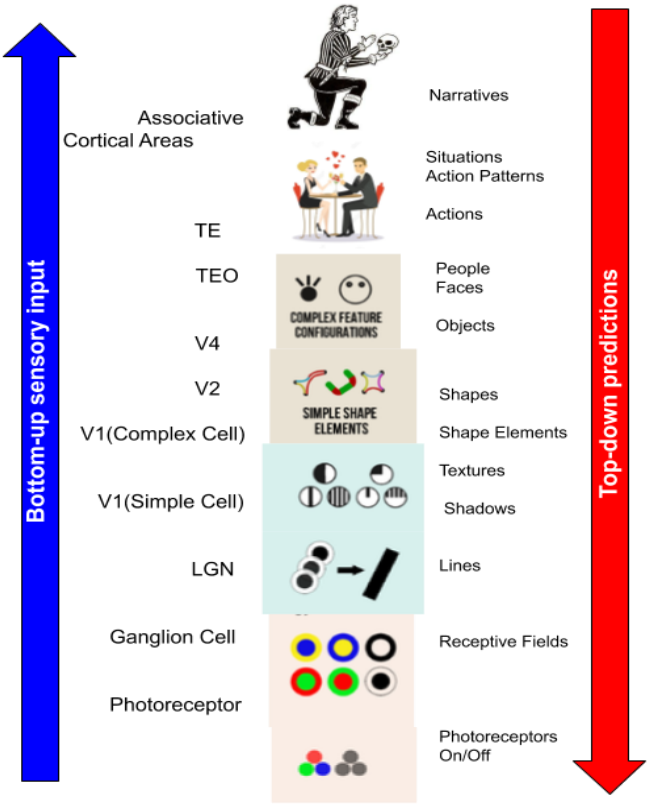

Figure 1: A predictive hierarchy of the type discussed in this section. On the left, brain areas [TEO: posterior inferotemporal cortex, TE: anterior inferotemporal cortex]. On the right, types of representations in order of increasing complexity. Sensory information travels up the hierarchy while generative top down predictions attempt to "explain away" the input. A prediction error at a particular level at the hierarchy will adjust the generative model at the level above it

This project aims to situate narrative representations of others (backstories) as a high-level generative model that attempts to predict other people's behavior. To the extent that a person's behavior now is a continuation of the story they've been living, a story about them will

be relevant to understanding how they will act. One reason to hypothesize that something like these narrative representations exists is that other people's behavior must be a major source of 'prediction error' within the system. Devising a number of diverse action patterns or narratives would be a helpful way of 'explaining away' the strange ways we see people acting (as opposed to assuming everyone will just act in the exact same way).

Narrative representations may be defined across many levels of the processing hierarchy. Personal lifetime narratives (co-constructed with others) might sit near the very top and organize many levels below (Mar, Peterson & Hirsh, 2013). Also, narrative models may help us to fill in gaps about confusing situations we find ourselves in (Figure 2). However, this project is concerned specifically about the stories we construct around the other people who occupy our lives.

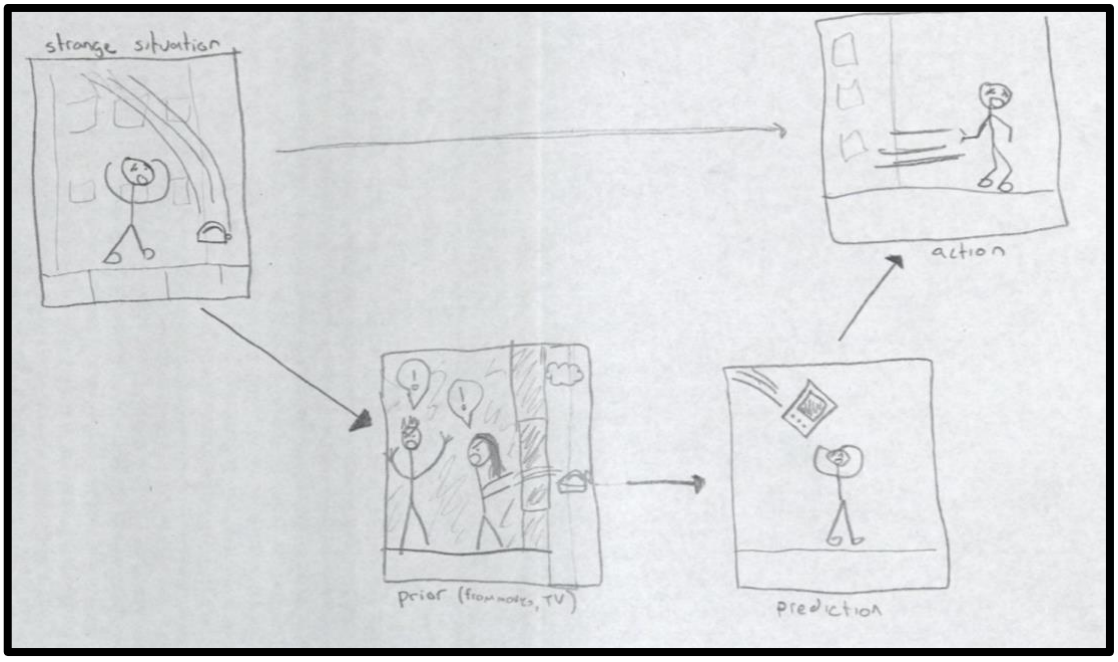

Figure 2: An example of how narrative representations work in a predictive scheme. In the first tile, a strange situation presents itself (a toaster falls out of the sky and hits the ground in front of you.) A common trope in movies, TV is a couple fighting in which the girlfriend starts to throw the boyfriends belongings out of the window onto the street. This explanation for the situation leads to a prediction (another appliance is soon to follow), and eventual action (fleeing the scene)

First Impressions

If these generative narrative models play a role in our understanding of others and help to structure our predictions, studying them could help to explain the power that first impressions have on our relationships with others. When a narrative is created around someone that we meet, our perception of them and attitude toward them is altered. Indeed, psychological literature confirms the power of our prior expectations on our subsequent perceptions of others (Harris & Garris, 2008). Expectations derived from first impressions can lead to self-fulfilling prophecies and biases in processing (Patzer, 1985; Harris and Rosenthal, 1985). Specifically, seemingly fleeting first impressions may persist in an individual's mental representation of another and affect the kind of information that is subsequently sought out about that other, how information is encoded and interpreted, how information is reconstructed in memory, and ultimately how one acts toward that person (Ambady & Skowronksi, 2008).

Most research on first impressions focuses on the specific cues that are important to people in forming their impressions. These cues can be divided into two categories, appearance and behavior. 'Behavior' in this context is defined broadly and includes things like the environment in which the person is situated, as well as their actions and what they say. For instance, environmental cues encountered before the formation of first impressions can influence the formation of the impression through *assimilation* or *contrast* (Weisbuch et al., 2008). The present study aimed to keep the environment in each case constant (a city street), in order to minimize these sorts of effects. The literature on appearance emphasizes facial cues as the main determiner of first impressions (Zebrowitz & Montepare, 2008), with attractiveness as a common variable of study. Researchers found that faces that were rated as more attractive tend to be perceived as more likable, intelligent, outgoing, and socially competent (Zebrowitz, Hall, Murphy & Rhodes, 2002; Feingold, 1992).

This research mainly assumes the content of these impressions to be a variety of traits, such as: social power, social warmth, honesty, physical fitness, intellectual competence, etc. (Zebrowitz & Collins, 1997; Keating & Bai, 1986). As explained in the next section, I call these types of impressions *attributional.* I don't deny that these traits are a key part of our impressions of others. However, I believe that a deeper understanding requires us to take into account the human interest with the story behind the traits that we see in someone, i.e. why they are the way

that they are. One reason it might be advantageous (in a predictive sense) for humans to create a richer representation such as this is that a story can explain many things about a person compared to an attribution. For example, knowing that someone comes from a broken home might explain many things about them, and suggest ways to connect with them, whereas simply noticing that they are 'cold' socially is a surface-level representation, and won't help much in interacting with them. I reject the idea that we conceptualize other people as just a 'bundle of characteristics and attributes.' Instead, we see them more as a dynamic agent moving through time, being shaped by certain people and events in their life, as well as causing effects of their own on the world.

To be clear, this study doesn't directly address the question of if these richer narrative representations are created spontaneously by people in real life encounters. However, if they are, the results in this study will help to map out what they might look like.

Narrative Representations

It's helpful now to define what I mean by a 'narrative' in the context of this paper. I follow Theodore Sarbin in defining narrative as:

> '... a symbolized account of actions of human beings that has a temporal dimension. The story has a beginning, a middle, and an ending [or as Kermode (1967) suggests, the sense of an ending.] The story is held together by recognizable patterns of events called plots. Central to the plot structure are human predicaments and attempted resolutions' (Sarbin, 1986, p.3).

I think most important to our definition is that the narrative consists of a number of events involving humans and that these events are temporally ordered and causally connected. For example, "Professor Johnson told Debra she got an A; Debra was ecstatic; she drank a glass of champagne", describes a sequence of events that are causally and thematically linked, and are therefore likely to be stored in memory as a single unit. If instead, the events were "Professor Johnson told Debra she got an A; Debra visited her grandmother; Joseph asked Debra on a date", we wouldn't call this a narrative, since although the events could be in order temporally, they are

causally unrelated and are therefore likely to be stored in memory independently (Wyer & Gruenfeld, 1995).

Here I will introduce some terminology to help to distinguish different types of responses when subjects are asked to come up with a backstory. Responses of the type that social psychologists measure as reviewed in the previous section—lists of characteristics that might make up a person's 'stats' in a video game, as well as various facts about their family, job, etc.—I call *attributions.* Responses that consist of a series of causally connected events, I will call *narratives.* Responses that fall somewhere in between, a series of events that are partially connected or temporally out of order, I will call *semi-narratives.* This framework will be helpful in analyzing the data and discovering which conditions will elicit which types of responses (Table 1).

Table 1

Attribution	*His name is James. He is 49 years old. He works as a lawyer. He has a wife and two kids. He's generally kind and sociable, easy to talk to. He's an intelligent man.*
Semi-Narrative	*He was a triplet, and growing up with two brothers the same age made him competitive. When he was a teenager, his parents sent him off to boarding school against his wishes. Now James works as a banker. A recent successful venture at work has made him unexpectedly happy today. He's on his way to treat himself to an ice cream sundae at his favorite ice cream joint.*
Narrative	*James came from a wealthy family but was a chronic gambler for many years. His family tried to help him but couldn't get through to him. When he had nearly burnt through the last of his money, he decided to try cheating the casino. He had his friend Otto sit behind the dealer and signal to him the dealer's cards. But James was discovered by the casino manager. Unfortunately for the two friends, the manager had ties to the mob and was disposed to punishing cheaters in severe ways, such as cutting off their hands. James barely escaped, and he's now on the run from the casino. He darts a look behind him every few seconds to make sure he's not being followed and is quite worried about his dear friend Otto who was left behind at the casino.*

As Schank and Abelson, 1977 suggest, virtually all of the important social knowledge that we encounter is composed of stories that other people construct from their own life experiences, or learn from other sources (movies, TV, other individuals). Although most social information comes to us in this format, it is important to note that reality itself doesn't come in narrative form. Human cognitive processes must constantly transform the seemingly random, divergent, contradictory information into a cohesive plot structure that is coherent to ourselves and others (Sarbin 1986). The main task of this project would be distilling the raw perceptual information into the few things that are important to a coherent story and excluding all irrelevant information. This is reminiscent of Alfred Hitchcock who said: "*Drama is life with the dull bits cut out*." But what is the process by which some things are deemed important and some things disregarded and forgotten? Another task would be building causal and teleological links among the retained aspects. How are the pieces but back together into a cohesive story? The process by which narrative representations are made is still mostly a mystery.

Once constructed, the use of these representations in comprehension and judgment is recognized in many areas of psychology, ranging from memory researchers investigating text comprehension (Bower & Clark, 1969; Graesser, Singer, & Trabasso, 1994; Stein and Glenn, 1979), to clinical (Pennebaker, 2011), to developmental (Miller, 1994). However, little attention has been paid to how these representations are employed in the context of the first impression with a stranger. This study speaks to the process by which a world of seeming unpredictable 'strangers' is constantly, dynamically transformed into a world populated by characters, each in their own story, each playing their own part.

Character Identification

When tasked with coming up with a story about a person's past, one of the main ways you might begin is by imagining yourself 'in the other's shoes' i.e. identifying with the person.

This is well known to novelists, filmmakers, and other artists creating fictional works. Since their task is to get the audience invested in the story, one of the main ways they can do that is to have the audience identify with a character in the story (usually the main character, although not always). Identification serves many purposes: an understanding of character motivations, a

point of view of the plot, a sense of intimacy and emotional involvement with the character, and an investment in the outcome of the events of the story (Cohen, 2011).

Is this technique for audience involvement more effective in one particular medium than another? One might suspect that because identification is an imaginative process on the part of the audience, it might be more effective in text because the reader might already be using imagination to visualize the happenings in the story. Also, a text can make explicit the thoughts of a character in a way that visual media struggles to do. On the other hand, movies and television might benefit more from identification by the very fact that a character's thoughts are not explicit, so the audience can project onto them their own thoughts. McCloud (1993) suggests that *cartoons* are particularly amenable to identification since they provide a more abstracted version of the character. The cartoonist focuses on specific details and strips down a person to their most essential features. As a result, more people can 'see themselves' in the character (Figure 3). Photorealistic images, he suggests, are more detached and less receptive to audience identification.

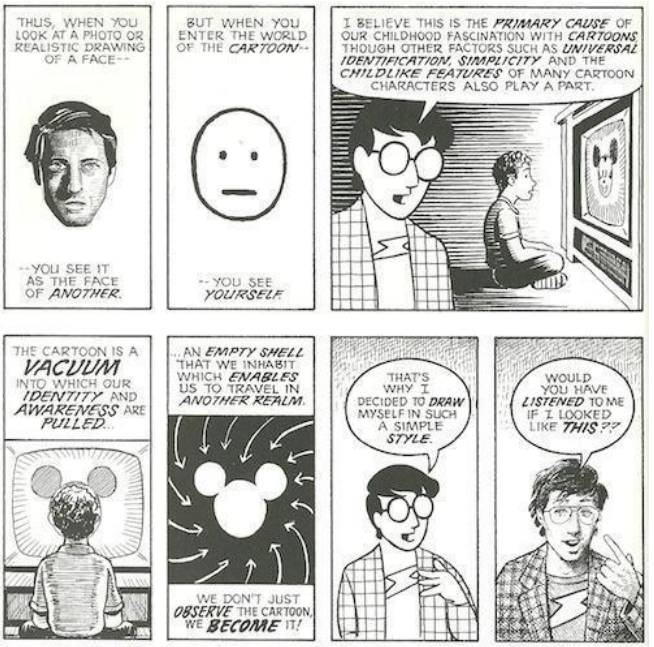

Figure 3: From 'Understanding Comics: The Invisible Art' by Scott McCloud.

Cognitive Neuroscience of High-Level Representations

Complex high-level representations that encompass multiple events, objects, people and actions tied together thematically aren't readily localizable to one area of the brain. It's more likely that they are distributed over many associative, mnemonic, and perceptual areas which are all activated together. However, if these representations sit atop cortical hierarchies of the type introduced in the 'predictive processing framework' section, one place to expect activation would be in the associative cortical areas, where perceptual streams from different modalities

converge and are combined into multimodal representations. The prefrontal cortex (PFC) is another area in which the main function is to organize levels of processing below it. Of particular interest is the dorsolateral PFC, which is thought to deal with more abstract content (Zald, 2007). The PFC, however, might be more involved in the maintenance of narratives as they relate to the self, as opposed to others. The effect of these representations on perception (as discussed in the 'first impressions' section) could be a consequence of cortico-thalamic feedback loops, wherein the cortex provides feedback to the thalamus in order to constrain the sensory information that the thalamus relays to the cortex in the future (Briggs & Ursey, 2008).

One study (Gola et al., 2015) examined the spontaneous storytelling ability of patients with various neurodegenerative conditions. Patients with semantic variant primary progressive aphasia (svPPA) tended to tell more stories and more autobiographical stories than healthy controls, although they perseverated on aspects of the self during storytelling. Patients with Alzheimer's disease (AD) told fewer autobiographical stories than controls and other disease groups. These results suggest that the temporal lobe is an important area for spontaneous narrative construction, although the type of deficit depends on the functional networks that are damaged *within* the temporal area (e.g semantic knowledge vs. autobiographical memory). The authors of the study recognized this and did a structural MRI of patients which revealed that temporal organization of stories, social attention, and evaluations all correlated with atrophy in the so-called 'intrinsic connectivity networks' such as the Default Mode Network (DMN), Salience Network (SN), and Limbic Network (LN).

Whichever area you want to look at, narrative representations should be thought of as *distributed* (Roy et al., 2018), since they encompass many modalities and have wide-ranging implications for sensory, emotional, and motor processes.

Materials and Methods

Present Study

The present study aimed to elicit narrative representations of other people (backstories) from subjects by asking them to create them for snapshots of various characters. The snapshots were presented in varying media. The subject's stories were then coded and analyzed for

structure/content. The main questions to answer here were: Could subjects regularly accomplish the task? Did the media type have an effect on the structure or content of the stories? Subjects were asked after they gave their stories if any of the items looked familiar to them. This part of the experiment was designed to discover any source material that the subjects used in their story. Were the backstory and familiarity connected by content? Did the type of familiarity (personal vs fictional) have any effect on the content of the story?

Subjects

Subjects were all undergraduate psychology students at the University of Colorado Boulder. Subjects weren't paid for participation but they received class credit for being in the study. 50 total subjects participated in the study

Study design

Subjects were asked to imagine that they were walking down the street encountering a number of random people. They were then presented with 5 people, one at a time, and asked to come up with a backstory for each one. An item consisted of one of five different characters in one of five different media (5 * 5 = 25 total items). The types of media were: 1. Photograph 2. Cartoon 3. Text Description 4. Photograph and text description 5. Cartoon and text description. Photos and cartoons were presented in paper format. Text descriptions were read aloud by the researcher, and not shown to the subject.

As you're crossing at a crosswalk, a rather menacing looking woman of about 50 shoots you a dirty glance. She has her hood pulled up over her head and her scarf wrapped tightly around her neck. She's well built and stocky, and you feel like she's crushing you with disapproval. Her face is wrinkled with time, but her boots are clean and jet black and she walks like she has somewhere important to go. She swoops by in a huff.

If subjects asked how long or detailed their backstories should be, they were told there was no requirement for length or detail, just whatever came to their head. If subjects asked whether they should connect the different stories, they were told they should keep them separate. If subjects were confused about what exactly the researcher meant by a ‘backstory’, they were told to create ‘a story about their past.’

The first item was randomly selected, then the researcher proceeded diagonally across the item grid (see Figure 4 below) so that all characters and media types would be represented within each subject.

Figure 4:

First item randomly selected

	Photo	Cartoon	Text	PT	CT
Character1	1	2	3	4	5
Character2	6	7	8	9	10
Character3	11	12	13	14	15
Character4	16	17	18	19	20
Character5	21	22	23	24	25

↘

	Photo	Cartoon	Text	PT	CT
Character1	1	2	3	4	5
Character2	6	7	8	9	10
Character3	11	12	13	14	15
Character4	16	17	18	19	20
Character5	21	22	23	24	25

Researcher Proceeded Diagonally to the right

After the subject completed the 5 items, all 5 items were presented together and the subject was asked:

' Do any of these people remind you of anyone? It could be someone from your own life that you know or have known, or it could also be a character from a book, movie, TV show, whatever. If so, could you tell me who it is and what it is about the person that reminds you of them.'

Subjects said their responses aloud and the audio was recorded for both parts of the experiment. After subjects finished the second part, they were told that this was the end of the experiment and received their credit.

Audio Recordings

Audio of subjects' responses was recorded using the Voice Memos app on a MacBook. Audio files were automatically transcribed by a speech-to-text application on Camtasia software (https://www.techsmith.com/video-editor.html). Transcriptions were double-checked for errors and corrected by the researcher.

Data Analysis

The coding of each response was done in three phases. First, each clause in the response was labeled as either an action clause or an evaluation clause, following (Labov & Waletsky, 1967). An action clause was defined as having at minimum a subject and an active verb in the past or historical tense. Evaluation clauses reflected the speaker's perspective on the events described or the internal states of the character. The researcher was blind to the media condition during coding. An example of the first coding phase is provided below:

Subject 17 Item 25: '*...Okay.. Well.. It's gonna be a little bizarre but I'm gonna go with it... So what happened was, she just left her ex girlfriend's house, they broke up, she took the cat with her and put it in her purse... Cause y'know they didn't want to divide it up or whatnot, she threw on a lot of stuff, the bag, she kinda threw the clothes on, she threw on the velcro sneakers cause y'know, they're comfortable and she wanted to take them, she's kinda skipping cause she's happy, she's* ***free****, she's free from that bad relationship. But yeah, she took the cat, and y'know, maybe she should've not zippered it completely so the cat can breathe, but yeah, I think it's gonna be okay... she's doing her thing and she seems like a loving person'*

In this response, action clauses were highlighted in yellow, and evaluation clauses were highlighted in teal. There was a total of 9 action clauses and 7 evaluation clauses.

In the next phase of coding, each response was determined to be a narrative, semi-narrative, or attributional response. Narrative responses consisted of at least three causally connected clauses in temporal order. Semi-narratives had at least two causally connected, temporally ordered clauses, or three or more causally connected clauses not temporally ordered. Attributional responses had clauses that weren't causally connected or temporally ordered, or contained simple trait attributions ('she is an unhappy woman', etc.)

Lastly, the stories were coded as either having a positive, negative, or neutral valence (in what light were the characters shown?), and the familiarity responses were judged to be either from a personal source, a fictional source, or neither.

Significance between groups was calculated using repeated measures ANOVA statistical tests, controlling for the character shown on each trial.

Results

Figure 5.1

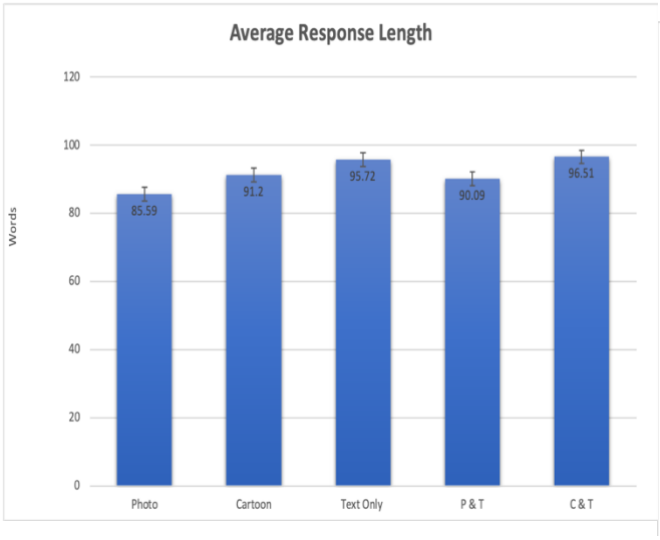

Figure 5.2

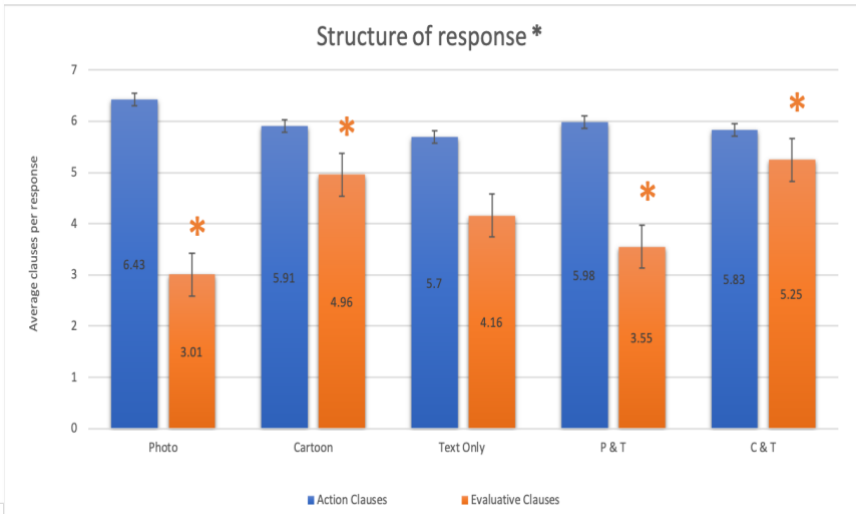

Figure 5.3

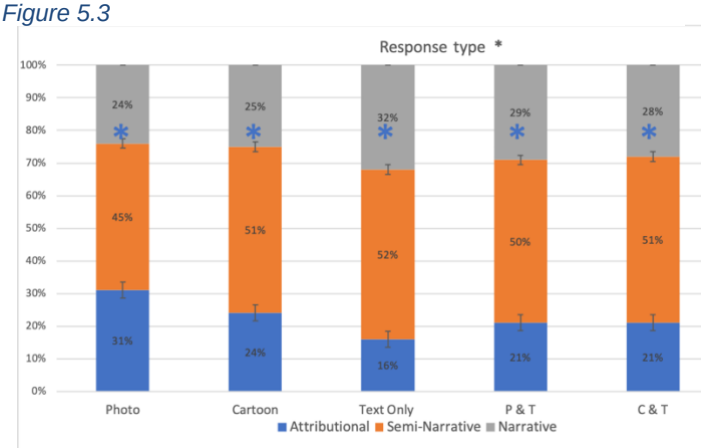

Figure 5.4

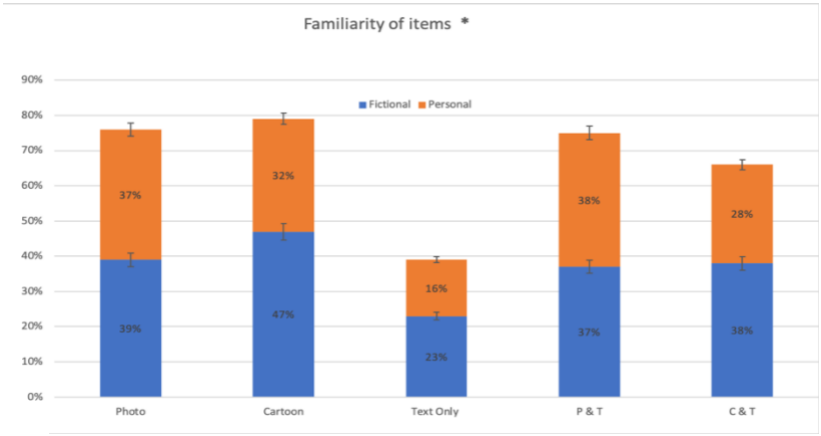

Figure 5.5

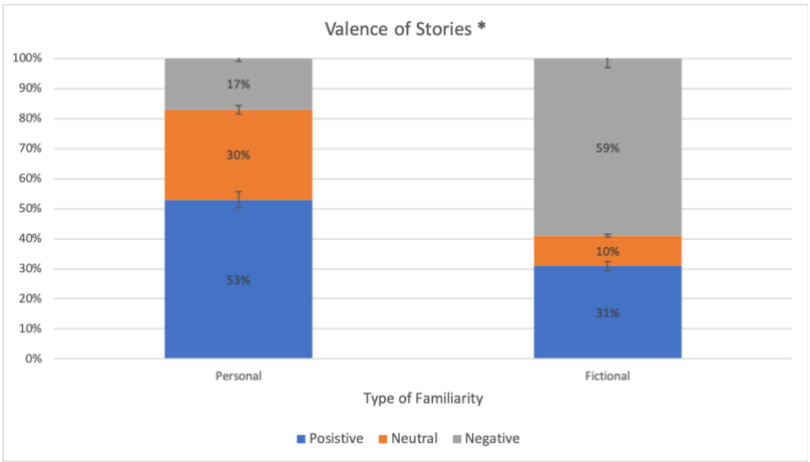

Figure 5: Figure 5.1 shows average response length in words as compared to the media type of the item Figure 5.2 shows average number of action and evaluation clauses as compared to media type. Figure 5.3 shows response structure compare to media type. Figure 5.4 shows familiarity type as compared to media type. Figure 5.5 shows valence of stories as compared to type of familiarity.

There weren't significant differences in the mean length of responses across media types, but when the responses were coded and analyzed for structure, a number of differences emerged among groups. Figure 5.1 shows average response length in words as compared to the media type of the item. No significant differences between groups were found from ANOVA ($F(4,192)=0.8643$). However, the subjects themselves were a strong predictor of response length ($F(49,192)=6.427$, $p<.0001$). Figure 5.2 shows average numbers of action and evaluation clauses as compared to media type. Groups failed to show significant difference in action clauses ($F(4,192) =.620$). There was however a significant difference in evaluative clauses ($F(4,192) = 10.135$, $p= 1.826e-07$). Figure 5.3 shows response structure compare to media type. Groups showed significant difference in proportion attributional responses ($F(4,192) = 10.35$, $p=1.294e-07$) and proportion narrative responses ($F(4,192) =2.67$, $p=.0335$). Proportion semi-narrative responses weren't significantly different ($F(4,192) =2.10$, $p=.08273$). Figure 5.4 shows familiarity type as compared to media type. Proportion personal familiarity ($F(4,192)=3.4$, $p=.0103$) and media familiarity ($F(4,192)=3.1$, $p=.0168$) were found to be significantly different across groups. Figure 5.5 shows valence of stories as compared to type of familiarity. Setting aside neutral stories, a binominal test showed that stories that had personal familiarity were reliably more positive than negative ($p=3.88e-7$), while stories that had fictional familiarity were reliably more negative than positive ($p=.001924$). The subsections ahead elaborate on these analyses and discuss more specific differences between conditions.

Are people able to come up with backstories?

In a rough sense, yes. Although there was a wide range of responses ranging from a few words to comprehensive life stories, it's notable that 77% of responses were at least semi-narrative in their structure (Figure 5.3). The strongest predictor of nearly all of the measures used was the subject themselves (i.e. people that tended to have longer responses, and more evaluative

clauses tended to carry that pattern across all items). This was to be expected since there was a varying degree of engagement with the task across subjects, and multiple ways of approaching the task since it was so open-ended.

Although people could readily come up with stories, they were often combined with attributions. For instance, a subject might start to talk about someone's past and, interspersed with their story, give their general impressions about the person.

Across the 50 subjects, there were many examples of similar stories for the characters. However, there was no *general consensus* backstory for any of the characters. Whenever there was a common story, there was always a competing story that was almost as common and had radically different implications. For example, multiple subjects casted Character #3 as a con artist who might have just been discovered and is worried about getting caught. Just as common however, was a story about a woman who is deciding about whether to accept a pending engagement to marry.

Group differences: Items with text elicited more narratives

Items with text tended to elicit more narrative or semi-narrative responses ($t(49) = 2.45$, $p = .00895$). Items with text were found to be 81% narrative or semi-narrative, and only 19% attributional. Items without text, on the other hand, were found to be 72% narrative or semi-narrative and 28% attributional (Figure 5.3). The highest rate of narrative and semi-narrative responses for a media type was the text-only condition, with 32% and 52% respectively. One possible explanation for this result is that the text items provided the subject with context about the character than an image could provide. The descriptions added a dimension of *time* to the characters, as well as providing an example of a style of storytelling that the subjects could build off of themselves, instead of starting from scratch.

Group differences: Cartoon items elicited more evaluative clauses

Further analysis of the structure of responses revealed that items with cartoon illustrations averaged a higher number of evaluative clauses per response than items with photographs ($t(49)=4.81$, $p<.00001$; Figure 5.2). Evaluative clauses were required to have at least a subject and a predicate and reflected either the speaker's perspective on the events described or the internal states of the character.

This result supports the hypothesis that cartoons might be more conducive to identification than photographs. The identification with the character could've led to a higher rate of evaluative clauses in the case of cartoons, while the more realistic photographic items led to a more detached narrative style, with a high rate of action clauses as compared to evaluative clauses. Supporting this, the photograph only group had an average of 6.43 action clauses per response versus only 3.01 evaluative clauses, by far the biggest difference out of any group.

Source Material: Personal Relationships

Subjects often used people from their own life as material to construct a backstory (Figure 5.4). For example, one subject's response to Character #2 was as follows:

'*So I think this man is sitting outside of a retirement home, and I think his wife passed away, he looks like he's very witty, and charming, so he could've been something like a lawyer or a doctor, had a good profession, I think maybe him and his wife got this parrot together, as kind of a pet to have, and when his wife passed away, the parrot got sad and stopped speaking. He keeps the bird around now as a companion, although they're both sad about his wife, they can still be together. And now, he's just still trying to live his best life while he can.'*

Later, when asked about the character's familiarity, the subject responded:

'Then this one... this guy reminds me of a personal friend I used to caddy for.. He was also a lawyer.. who lost his wife… and he ended up getting a dog, to keep him company you know after his wife passed, but it was very similar… he looks like him...and so I just kinda told

his backstory… yeah I used to be his caddy, and I don't see him anymore because I don't work there anymore...'

Something of note in this context is that when subjects used people from their own lives to help them construct new backstories, the stories tended to have a *positive* spin on them, and showed the character in a favorable light (Figure 5.5). It was common that these responses either **reinforced a friendly-looking character** with a sympathetic story or **revealed an unfriendly-looking character to be misunderstood.** A couple more examples are included below:

Backstory	Familiarity
'This girl comes from a very rich family, and she's kinda just done everything she's supposed to do.. her whole life… and people perceive her as a mean person, but really she's not mean she's just really awkward, like she doesn't talk much, at all.. And people are like 'wow, she thinks she's better than me' but really she's just a little weird'	*'She kinda reminds me of my friend Matild, who is like super pretty, super fashionable, super tall and thin, and when I first met her I was like 'she thinks she's better than me' but she was actually just very different than me, and she has a girlfriend, just not at all who I thought she was. Actually looks a lot like her..'*
'*I think she looks like a business woman. She's wearing something fancy. And that she wears sneakers, which means she just wants to walk fast and be comfortable, which I can respect, maybe she's walking to her company. And I think maybe her puppy is in her bag, and since she has to leave for a couple days but nobody can help her to take care of the puppy so she just brought her puppy to her company.'*	'*The last one reminds me of my mom. She's really busy every day. And she wants to take care of her business and also take care of my father and everyone in my family as well. And this lady also looks really busy. And when I was really little my mother always took me to her company so that she could work and watch me at the same time, but she was always patient with me.'*

Source Material: Fiction

Subjects also used fictional works as material for constructing their stories (Figure 5.4). Throughout the 250 total items, subjects used characters from movies, books, TV shows, plays, and music videos, and projected their stories (sometimes fully, sometimes in a fragmented manner) onto the people they were presented with. One subject's backstory for Character #3 was:

'I think that she's um.. a criminal, and that she is a con artist towards men… and she uses her looks and her beauty to get these men to buy her jewelry and buy her nice clothes. And I think she just conned a man who's very famous and important, and I think she's worried that police are gonna be out looking for her because she took a lot of money from this guy, so then, and when you walk by her, she's so on edge that she thinks you might be working to find her, that she runs away from you'

When asked if the same person was familiar to them, the subject responded:

'This one reminded me of, I just watched this movie, now I can't think of the name, but it reminded me of a movie with Rebel Wilson and… Anne Hathaway… they were con artists. Cause she kinda looked like Anne Hathaway a little bit with the darker hair and the hat. [The Hustle]'

In contrast with the use of people from their own lives, subjects who used fictional characters to create their backstories tended to have stories with a generally *negative* connotation, and show the characters in an unfavorable light (Figure 5.5). There were exceptions of course, but this was the general trend. With these responses, **unfriendly-looking characters were confirmed to be unfriendly,** while **friendly-looking characters were suspected to have a hidden motive or personality.** These hidden motives were often sinister or criminal. More examples are included below:

Backstory	Familiarity
'This woman… has several lovers.. And one of them has recently gotten engaged to her.. And she doesn't know if she wants to accept it or not.. So she's pondering that.. Because he hasn't been very honest with her in the past… but he does have a lot of money so she wants to live a luxurious lifestyle.. And there's also all the other guys to think about.. But yeah she recently got engaged so that's why there's a ring around her neck.'	*'She kinda reminds me of Daisy from 'The Great Gatsby.' She doesn't get engaged in the story she's already married. But it's kinda between her husband and the Great Gatsby still loves her and tries to win her back. So she's kinda between and has to decide.'*

'Alrighty so what I think it is is that he used to be like a world class hunter, and he would travel around the world kinda like... did you ever read 'The Most Dangerous Game?' He's like a world class traveler and he used to go and live out in the safari and the outback and hunting exotic animals and taking exotic animals as pets along the way. And this parrot named Richard was his companion on this journey across the world.'	*'Yeah like I said, the guy from 'The Most Dangerous Game'. It's a short story but I'm blanking on who wrote it right now, I think he's famous'*
'So I think this man maybe works for the government, maybe like an agent, for the FBI, or something, and he kinda does this weekly, sits down on the bench, three times a week, and just observes, and tries to gather data by observation for the government that he works for, because there's some bad goings on in the neighborhood that he's in so the government wants him to just observe. And the reason he has the parrot is to like draw people in, to like have them ask questions and it allows him to learn about the people and the goings on of the area'	*'I forget what movie it was but it was a spy movie where the intelligence service used this guy, the way they got information was by planting this old guy on a bench and he observed this big deal going on where there was a guy selling guns… I forget the name of the movie though it was a long time ago..'*
'This guy is most likely a drug dealer… or he used to be a dealer now he's a kingpin in the cartel…. And he's feared by everybody.. And he keeps this parrot around as his sidekick in case anybody disobeys him or doesn't pay up or something, then he'll tell the parrot a command and the parrot will pluck the guys eye's out with its beak.'	*'This guy reminds me of the old guy in 'Breaking Bad', the guy in the wheelchair… Tuco's grandfather?... Old man Salamanca… he's like a drug kingpin but now he's too old.'*

Discussion

Paradox of Fiction

The Paradox of Fiction is a philosophical dilemma first introduced by Colin Radford and Michael Weston in a 1975 paper, '*How can we be moved by the fate of Anna Karenina?'* The paper makes explicit the age-old problem of **how the audience can get emotionally involved and invested in the fate of characters that they know well don't exist**. This paradox is related to the larger questions of *why fiction, stories, storytelling, etc. exist,* and *why have they been so important to human life and culture for millennia?*

The answer to the latter question may be complex and have many answers that are all correct. That said, the results of this paper suggest one way in which fictional stories could structure our cognition and provide us with an evolutionary advantage. These stories have within them character representations that we can carry forward with us, and project onto new people that we meet. The fictional representations would add to our repertoire of representations of real people that we have known. Since we only get to know a certain amount of people in our lives, and these people are only a small sample, stories would provide a more diverse range of representations, and expose the person to a wider repertoire of characters that they can compare and contrast to new people. In other words, fictions expand the human capacity to encounter unknown people and understand them.

These character representations are surely only one of many ways that stories structure our cognition. Plots and the patterns of events that stories consist of could also shape and organize the prediction mechanisms of our cortex. Also, identification (often with the protagonist) and the common 'hero myth' could be seen as 'roadmaps' that organize action sequences, and determine how we interact with the obstacles and conflicts of our lives. These possibilities might be further explored in future research, but remain difficult to study with current methods in psychology.

The relationship between fictional works and cognition must be a bidirectional interaction. The film that the filmmaker produces will arise out of how he/she sees the world around them. The film itself will also *cause* those who watch it to see the world in a different way. The tricky part is to tease apart the effects of culture on cognition and vice versa. It's

especially hard nowadays with massive studio productions (such as blockbuster movies) to see whether the movie is having an effect on how people think or if it's simply *growing out of* the psyche of the culture itself. These problems and many more make this area of study difficult to get a handle on.

A common answer to the question of why stories are such a huge part of human life might be “because they’re entertaining.” This answer, however, doesn’t seem to explain anything. The next question might be “But *why* are they entertaining?” This question, as mentioned before, may have many answers. But starting to map out the effects of stories on explicit psychological mechanisms may begin to shed light on how stories aren’t simply a passive consuming experience, but rather play an active, dynamic role in shaping our experience and influencing our decisions.

Creativity, repurposing, and improvisation

The reuse of existing knowledge is an indispensable part of the creative process. Past knowledge is copied, transformed, fragmented, and combined into novel ideas with renewed relevance. Subjects in this study were given a task where they needed to come up with a series of stories for people based solely on an image, or a few lines of text. As we have seen though, the stories couldn’t be conjured out of the air whole-cloth. Subjects used stories from the people in their own lives, as well as fictional characters that the items reminded them of.

It’s important to note though that in most cases, the source material that they used couldn’t be simply projected onto the new person. This is because certain details about the image, or text, might not fit. With Character #2 for instance, the parrot on the man's shoulder must fit in somehow into the story, since it calls out to be explained. Therefore, the subject must twist their source material to fit the present situation. This is where creativity comes in. The subject can use fragments of previous characters they know, as well as impressions of the present character, to craft a new story where everything makes sense.

Each new person we meet is not an exact copy of someone we already know but is in fact a brand new person. However, it’s not feasible to start from scratch in forming an impression of the person and give them a blank slate to show us who they are. We use what information we get and extrapolate guided by our past experience with people. There are certain things people have

in common. I believe these things are best communicated through the stories that permeate our culture.

One can see in this context how creativity can play a role in the predictive mechanisms of our cognition, be it repurposing, or remixing old information into a relevant inference about someone. The fictional stories we encounter could provide material for this process, as well as novel ways to combine them into new representations we can use in life.

Implications for Media's effect and Ecological Validity

If the media that someone consumes has implications for their predictive mechanisms that they use in everyday life, it follows that a changing media will change the way we perceive others and characterize them. One explanation for the numerous backstories involving sinister or criminal motives observed in the present study is the saturation of today's media with characters of that strain ('True crime' television, etc.).

But how much do the results from this experiment carry over into the real world? This was an artificial situation in which subjects were asked to come up with a story about a picture in the lab. But do people spontaneously do this in real life? Also, how accurately do the stories reflect the subject's actual impression of the person? Could it be that the stories are mostly 'just for fun' and don't affect the subject's perception of the person or actions toward them?

To try to answer these questions I would direct the reader back to the section on first impressions, and argue that in this experiment I simply asked subjects to *extend* their first impression of a person into a story. There might be different degrees to which people come up with fleshed-out stories about the pasts of people they meet, versus being just left with general impressions or attributions. But I would argue that they lie on the same continuum, one being the extension of the other. I think this continuum can be seen in the responses within this study. If we view the stories in this way, their importance becomes clear, since we already know the power of first impressions on subsequent perception and action (Ambady & Skowronksi, 2008).

If these conclusions are accepted, it suggests a direct link between the media we consume and how we see those around us. We would do well to keep this in mind when observing how

quickly our media is changing, including the types of characters that populate our movies and TV screens, and pause to reflect on whether this is for the worse or for the better.

As mentioned in the introduction, the results of this paper don't speak to whether or not people spontaneously create these rich narratives of others in real life encounters. Future research could address this question more directly. For instance, subjects could be asked to different things with character snapshots, such as predict what they will do next. Then, the researcher could ask the subject about the reasons for their prediction and see if the subject put the character into a narrative context in order to generate their prediction.

Implications for Theory of Mind and ASD

Theory of Mind (ToM) is a form of social cognition that refers to the ascription and recognition of thoughts, emotions, and beliefs to the self and others and the ability to recognize that another's perspective is different from our own (Baron-Cohen, 1999). ToM is closely related to 'character identification', discussed earlier in the paper, wherein readers are able to see the story through the eyes of a character, through their perspective. ToM was presumably one of the key abilities underlying subjects' ability to complete the task in this experiment. This provides a potential connection between results in this paper and neurodevelopmental conditions that show impaired ToM, such as Autism Spectrum Disorder (ASD).

There is evidence that even though ToM for others is delayed and often impaired in ASD, individuals have intact or even enhanced ToM processing in relation to anthropomorphic or cartoon versions of stimuli (Grelotti et al., 2005; Atherton & Cross, 2018). One explanation given for this result is that cartoons, having exaggerated physical appearance and motion, heightens the unpredictability of such stimuli, which leads to a desire for increased efficacy and employment of ToM (Rhodes et al. 1987). An alternative explanation more related to this paper is that cartoons are more amenable to ToM processing because of their abstract nature, which makes them more susceptible to identification. Cartoon versions of characters that kids enjoy so much might serve as 'stepping stones' to identification with more complex, realistic characters in adult media.

Grappling with the issue of ToM in Autism is important because subsequent difficulties with skills like ToM have been shown to longitudinally impair social functioning and peer

relations (Caputi et al., 2011). Thus, poor ToM may negatively influence a person with ASD's motivation later in life to engage in social interactions. The social motivations hypothesized to underlie the anthropomorphizing of cartoons may lead those on the spectrum to seek social connections and therefore gain ToM experience and expertise amongst unlikely sources (Atherton & Cross, 2018).

Obviously, there is a lot more work to do to start approaching workable interventions related to these theoretical issues. But the results from this paper suggest a possible direction for therapies in ASD. Specifically, the development of ToM in clinical groups such as ASD could be aided through exercises like the task in this study. The process could be bootstrapped by utilizing cartoonish images, that facilitate identification. It's important to remember that people without ASD aren't born with a Theory of Mind, it's a cognitive skill that emerges in the fourth or fifth year of life. This suggests at least that there is a learning process; which interventions could aid or delay in clinical as well as non-clinical groups.

Conclusion

This study described the structure and content of narrative representations of others (backstories) and aimed to prove their usefulness by situating them in a predictive-processing model of cognition. The most important finding was the discovery that's subjects reused stories from personal acquaintances as well as fictional characters when constructing backstories in a new context. The intersecting issue of cartoon images facilitating character identification proved useful for discussing clinical applications such as in ASD. The overarching theme of this study (and hopefully future research of mine) is about how the media we consume intrudes on and transforms the cognitive mechanisms that we use every day.

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Appendix

Remaining images and text items:

“As you walk you see an older, thin, balding man sitting on a bench with a parrot resting on his shoulder. Both the man and the bird have sharp eyes, but the man’s eyes are dark and perceptive, while the birds eyes are bright and piercing. You stop by for a chat with the man and discuss various affairs of the city for a while. The man is perfectly friendly, and you notice he has a quick, clever manner of speaking. All the while, his parrot is perfectly silent. You eventually mention that his bird is very polite, and he says ‘Oh yes, Richard hasn’t spoken in at least five years’’.

“There’s a young woman leaning against a storefront. She’s looking down at the sidewalk with a concerned look, tapping her foot, pondering something anxiously. She has pale skin and dark hair and is dressed in a black dress, a wide black sun hat, and has a necklace with a ring on the end of it. She glances up quickly at you as you pass by, with the same concerned look, then looks back down. When you look back a couple of seconds later, the woman is nowhere to be found.”

“As you round a corner, you hear the soft sound of an electric guitar echoing off the buildings down the block. You get closer, and realize it’s an older man, with an abundance of grey stubble and unkempt hair. He’s playing the guitar on the street corner with a glass in front of him, it only has a few coins and bills in it. He’s playing “I want to hold your hand.” He plays the guitar smoothly and sweetly, but his voice is hoarse and weak, and his signing isn’t quite McCartney’s. Still, he smiles and spins around happily as he plays, and eventually a small crowd gathers. Everyone applauds heartily when the song ends, and the man smiles brightly showing his crooked teeth.”

“A woman strolls by who’s in her mid twenties, she has three full bags strung over her shoulders and dark aviators on. She’s got her earbuds in and it seems like she’s walking to the rhythm of a song, since there's a slight skip in her step. She also has some cool white high top sneakers on with velcro straps. As you pass by, you’re horrified to notice that inside one of the bags, a tightly zipped purse, something seems to be moving around...”