Jerome Bruner's Two Modes of Thought Theory Deserves a Closer Look

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Psychology lacks a satisfying large scale theory to explain the prevalence and importance of narratives to human cultural activity, their effects on the mind, and how the mind gives rise to narratives. This paper considers Jerome Bruner's theory, proposed in 1986, that the mind is divided into a Narrative and Paradigmatic Mode of thought. The Two Modes theory (2M) has never received close scrutiny by psychology, yet continues to be cited both within and outside of the field. 2M deserves a closer look: it explains a well-studied psychological effect of narratives, narrative persuasion, better than both a reputable theory of narratives, transportation theory (TT; Green & Brock, 2000), and a popular theory describing the structure of the mind, the elaboration likelihood model (ELM; Petty & Cacioppo, 1986). Further steps to evaluate 2M are discussed in the conclusion.

Keywords: storytelling, paradigmatic, narrative, transportation, dual-process

Subject classification codes: include these here if the journal requires them

Terms

- *2M* – The Two Modes theory that divides human thought into the Narrative Mode (interpretive, meaning-seeking) and the Paradigmatic (logico-scientific) proposed by Jerome Bruner (1986).
- *DP* – Dual-process theories, referring to a family theories such as those put forth by Evans and Stanovich (2013), Chaiken (1987), Petty and Cacioppo (1986), and Tversky and Kahneman (1974) that generally divide mental processes into one pathway that is automatic, heuristic and requiring fewer cognitive resources, and the other which is slower, more rational and requiring more cognitive resources.
- *ELM* – the elaboration likelihood model (Petty and Cacioppo, 1986) is a dual-process theory that proposes persuasion can be understood in terms of

factors that increase a person's likelihood to focus attention on the argument, thereby processing that argument via a peripheral route or central route.

- *Narratives* and *stories* – I will use these terms interchangeably, though not everyone does. A narrative in its most basic sense is a "representation of an event or a series of events" (Abbott, 2008), typically involving characters, conflict and resolution (Dinesei, 2018). Dahlstrom (2014) adds that narratives also must provide causal relationships between the portrayed events[1].
- *Reader* – stories can be told, performed, or shown via any number of media. By "reader" I refer to the person "consuming" the story rather than creating it[2], be it reader, listener, or viewer.
- *TT* – Transportation Theory (Green and Brock, 2000) explains the effects of narratives on behavior as a function of a particular type of flow-like engagement with the narrative, called transportation.

1 Introduction

Storytelling, whether in art or conversation, is a practice found in every culture of the world and has likely been a human activity since the early days of our modern evolutionary existence (Donald, 1991). Narratives are a core component of everyday discourse (Costabile et al., 2018, Dinesi, 2018; Abbott, 2008) and manifest themselves in most art forms, including text, theater, film, painting, sculpture, oratory and video

[1] Though if you have ever heard a five-year-old tell a story, you might disagree.

[2] Bruner (1986) suggests a more complicated conception of processing narratives in which the reader has a constructive role in any story they read, in the sense of creating their own mental representation of it

games. Literary theorist and philosopher Roland Barthes said of the ubiquity of narratives:

> "Narrative is present in every age, in every place, in every society; it begins with the very history of mankind and there nowhere is nor has been a people without narrative. All classes, all human groups, have their narratives… narrative is international, transhistorical, transcultural: it is simply there, like life itself" (Barthes, 1966).

Evidence from psychology and neuroscience shows profound effects of narratives on human thought. These effects include narrative persuasion (Dahlstrom & Scheufele, 2018, Schreiner et al., 2018, Braddock & Dillard, 2016, Green & Brock, 2000), improved learning, (including memorization and recall; Prins et al., 2017, Dahlstrom, 2014, Liu & Chuang, 2011), and increased social ability or tendency (Bal & Veltkamp, 2013, Johnson, 2012), such as perspective taking, belief attribution and other theory of mind capabilities (Black & Barnes, 2015, Oatley, 2012) and personal identity formation (Oatley, 2012, Djikic et al., 2009). Some theories exist to explain the effects of narratives, such as Transportation Theory (Green and Brock, 2000), Simulation Theory (Oatley, 2012; 1999) and the Narrative Practice Hypothesis (Hutto, 2007). These theories, though limited in scope to the relationship between narratives and the mind, are successful in their purpose: they explain empirical observations, have withstood some scrutiny and remain viable within their specific explanatory spaces. However, psychology still lacks one or more wider scale theories in which these narrower theories might fit, to explain the prevalence and importance of narratives to human cultural activity, their effects on the mind, and how the mind gives rise to narratives.

Such a theory was proposed over 30 years ago by developmental psychologist Jerome Bruner in a book entitled *Actual Minds, Possible Worlds* (1986), yet the status of this theory remains mysteriously inconclusive. Bruner's theory suggests that at any one

time, people think in one of two modes of thought, each with its own sort of truth outcomes: one interpretive, ascribing personal meaning to events and the actions of people; the other rigid and logical, for determining facts about the world and its processes. He called the former the Narrative Mode and the latter the Paradigmatic Mode. I will refer to this theory here as the Two Modes theory (2M).

Bruner posited this bold division of the mind into two modes to explain what he had seen after teaching both psychology and literature for a number of years, as well as to address a striking inequity he believed existed in the study of the mind. Bruner saw the Paradigmatic Mode as having already been the focus of psychology research since its inception, increasingly so as the sciences of the mind turned towards computational explanation (Monteagudo, 2011). The Narrative Mode was the novel aspect of 2M. It gave a reason why such concepts as personal meaning and lived experience had remained thus far tantalizingly elusive to psychological study: The mind, when performing these processes, operates in another mode with poorly understood parameters.

There are good reasons to devote time and energy from the sciences of the mind to seriously consider the claims made by 2M, rather than to let it fade entirely into obscurity[3]. One reason is that it is not really fading: 2M continues to be cited in good faith to this day, forming an important psychological piece in arguments posed within a range of fields (e.g., Ropo & Yrjänäinen, 2020; Dahlstrom & Scheufele, 2018; Danesi, 2018; Bal and Veltkamp, 2013; Oatley, 2012; Adler, 2008; Green & Brock, 2000). A second reason is that 2M offers explanatory power that neither psychological theories of narratives, nor wider scope theories of the mind can give. It is to this second point that I devote the remainder of this paper. Specifically, I will show that 2M is

[3] I can only speculate as to exactly why it has not received a formal evaluation: perhaps it was received more as a description of general approaches to forming knowledge, rather than a formal psychological theory.

unambiguously a psychological theory, not merely a set of qualitative observations: that it explains observed phenomena, rather than requiring explanation. At least part of this theory, the Narrative Mode, remains viable. Furthermore, the large scope of this theory (explaining the mind, rather than limiting its scope to narrative effects) is warranted.

To demonstrate these points, I will focus on one of the main categories of empirical findings about narratives: narrative persuasion. To justify 2M as a psychological theory of narratives, I will show that it provides a more thorough explanation of these empirical findings than an existing narrow theory that has been accepted and supported within its scope: transportation theory (TT; Green and Brock, 2000). To justify the wider scope of 2M to the structure of the mind, I will compare it to how a larger theory of the mind, the elaboration likelihood model (ELM; Petty & Cacioppo, 1986), explains the empirical findings, and argue that 2M offers a more parsimonious and complete explanation, while also integrating conceptually with TT. While my method is not exhaustive, it justifies further consideration of 2M. I will conclude by suggesting that 2M likely stands up as a theory of a Narrative Mode, but that dividing the mind into two modes and requiring the Paradigmatic Mode to encompass all non-narrative processing is not justified. I will discuss some implications and further steps for evaluating and refining 2M.

2 Empirical Findings: Narrative Persuasion

The ability for narratives to persuade has been one of the more popular ways to measure the effects of narratives on individuals. Researchers typically present participants with an argument in the form of a narrative or non-narrative text (though other media, such as film are sometimes used) and measure the level of narrative-consistent beliefs or attitudes expressed by the participant afterwards. These

measurements typically involve counting story-consistent false beliefs on items such as ‘Tooth brushing is/is not good for your teeth and gums” (Appel & Richter, 2007; Gerrig & Prentice, 1991) or attitudes towards real-world social groups (Yan & Liu, 2016) or issues (Moyer-Gusé & Nabi, 2010).

Research has generally found narratives to be persuasive (Schreiner et al., 2018, Braddock & Dillard, 2016; Green & Brock, 2000), across multiple media, including text (Wojcieszak & Kim, 2016, Hamby, 2014, Appel & Mara, 2013), film (Shen & Han, 2014; Moyer-Gusé & Nabi, 2010) and radio (Riley et al., 2019), whether presented as fiction or non-fiction (Appel & Mara, 2013, Green & Brock, 2000). Some research has found this effect to persist or even strengthen over time (Jensen et al., 2011; Appel & Richter, 2007). Combined with the improved learnability of narratives, this makes narrative a powerful tool for promoting behavior change (Dahlstrom & Scheufele, 2018). Correspondingly, narrative works of fiction, such as Hariet Beacher Stowe’s *Uncle Tom’s Cabin* and Aleksander Solzhenitsyn's *The Gulag Archipelago* are believed to have catalyzed social movements (Rosenberg, 2016). Public health and science communication campaigns have used narratives, to some success, to promote their messaging (Igartua & Vega Casanova, 2016, Dahlstrom, 2014,). Though some studies have found evidence against the persuasiveness of narratives (Prati et al., 2012 ; Gesser-Edelsburg & Endevelt, 2011; Cheney, Kohler, &Muilenburg, 2006), a meta-analysis of 74 studies of narrative persuasion (Braddock & Dillard, 2016) found a positive relationship between narratives and narrative consistent beliefs, attitudes, intentions and even behaviors, regardless of medium or fictionality (though to be clear: this effect was found for studies comparing narratives to no attempt at persuasion). Building on theorizing by Bruner (1986) and Curtis (1994), Dahlstrom (2014) invokes Bruner’s 2M to explain narrative persuasion, suggesting that “because they describe a

particular experience rather than general truths, narratives have no need to justify the accuracy of their claims; the story itself demonstrates the claim."

Theories to explain the persuasiveness of narratives generally fall into the categories of either narrative or dual-process theories. The dual-process theories such as ELM (Petty & Cacioppo, 1986) or the heuristic model (HM; Chaiken, 1987) explain the persuasive effects of narrative the same way as any other type of messaging. These theories posit that the crucial factor is how much the reader focuses on the argument, with factors that influence this one holding importance within the theory. Both ELM and HM remain active theories of persuasion, though I will focus on ELM. Narrative theories, while not as a rule incompatible with dual-process theories, treat narratives as special, suggesting that they create effects not predicted by dual-process theories. The main narrative-specific theories of narrative persuasion are TT (Green and Brock, 2000) and the extended-elaboration likelihood model (Slater & Rouner, 2002), though various derivatives exist (e.g., van Laer et al., 2014; Moyer-Gusé & Nabi, 2010). I will focus on TT, which has been well-supported and remains viable and cited to this day.

3 Bruner's Two Modes Theory

3.1 The Enduring Legacy of 2M

2M continues to be cited to this day. This adds to the impetus for psychology to evaluate it, especially with citations from fields outside of psychology, such as education or marketing research, which may lack the tools to give it proper scrutiny. Though there are other reasons to properly vet 2M, one major reason is that doing so will affect the strength of arguments posed by those who cite it.

Authors generally invoke 2M to appeal to the structure of the mind to support their point. In education[4], 2M has been cited as key to a discussion of narratives in knowledge formation (Ropo & Yrjänäinen, 2020) as well as to make a case for narrative structure in teacher training in the UK (Burnett, 2006). In communications psychology, Dahlstrom & Scheufele (2018) used 2M to explain why people respond better to scientific information when it is presented in a narrative form. Hamby (2014) and Green and Brock (2000) also invoke 2M to explain the persuasiveness of narratives (see the section on TT below). Economists Van Bavel and Gaskell (2004) use 2M to explain the difference between "lay and expert economic thinking." Bal and Veltkamp (2013) use 2M as an explanation for why fiction might elicit stronger emotion (and thus influence empathy) than non-fiction. Adler (2008) argues that 2M explains why two distinct views on the reasons people undergo sex reassignment surgery were irreconcilable: one prioritized the evidence of verisimilitude (feeling real) sought by Narrative Mode thinking; the other the data from research, sought by Paradigmatic Mode thinking.[5] Narratologists and cultural theorists use 2M as evidence of the psychological basis for the human attachment to narrative (Danesi, 2018; Kratz, 2016; Meretoja, 2014; Abbott, 2008). Some psychologists have used 2M to support the claim that narratives hold a privileged position in cognition, which forms the basis for their own theories (Oatley, 2012; Green and Brock, 2002), or for in the case of Mar (2004) for forming a synthesis of neuropsychological theories of narrative explanation.

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[4] An area where Bruner remains influential in education theory is his proposed spiral curriculum (Johnston, 2012), though this is not directly related to 2M

[5] N.b.: Empirical research studies are not bias-free, but rather subject to researcher bias at all stages (design, hypothesis generation, data collection, analysis and interpretation)

3.2 The Theory

Bruner summarizes his theory as such:

> "There are two modes of cognitive functioning, two modes of thought, each providing distinctive ways of ordering experience, of constructing reality. The two (though complementary) are irreducible to one another" (Bruner, 1986, p. 11).

The Narrative Mode, according to Bruner, is highly interpretive and subjective, a mode of thought for forming causal connections between events, people, and ideas, for assessing the place of the self in society, and for finding personal meaning (Dahlstrom, 2014; Monteagudo, 2011; Bruner, 1986). The Paradigmatic Mode, also called the Logico-scientific mode, is characterized by seeking facts about the world that can be supported with evidence (Dahlstrom, 2014; Bruner, 1986). Neither subsumes the other, as their goals are distinct. The Narrative seeks verisimilitude, or to "feel real" and for "likely particular connections between two events – mortal grief, suicide, foul play" (p. 12). The goal of Paradigmatic Mode thinking is universal truths, facts and processes, not subject to interpretation. The cultural manifestations of the Narrative Mode are the humanities and the arts: narrative history, literary theory, anthropology, literature, theater, film; the Paradigmatic Mode, mathematics and the sciences: chemistry, physics, quantitative sociology, neuroscience. When people want to know things about the world, they operate in the Paradigmatic Mode; when they want to understand *their* world, they think in the Narrative.

Despite devoting a book towards elaborating on the distinctions and implications of the two Modes, Bruner leaves many questions unanswered. He never explicitly presents a formal definition of a mode of thought, or what might distinguish *modes* from

types of thinking (Evans & Stanovich, 2013), thinking styles[6] (Evans & Stanovich, 2013), pathways (Petty & Cacioppo, 1986), modules (Fodor, 1987) or systems (Kahneman, 2011). At various points, Bruner characterizes these modes as "modes of cognitive functioning," "modes of thought" and "ways of knowing" (Bruner, 1986). It is not essential to clarify this distinction in order for me to support the argument that 2M deserves more rigorous attention; but it is a distinction that must be made eventually in order to validate the theory.

The Paradigmatic Mode, according to Bruner, had already received enough attention from psychology at the point when he wrote *Actual Minds*: "In contrast to our vast knowledge of how science and logical reasoning proceed, we know precious little in any formal sense about how to make good stories" (Bruner, 1986, p. 14). Psychology, in his view, was focused on the ways people determine what is true about the world. Bruner does not indicate specific examples from psychology, but presumably any research into semantic knowledge and belief formation, such as judgment and decision-making (e.g., Petty & Cacioppo, 1986, Wason and Evans, 1975) would be studying the Paradigmatic Mode. An important consequence of Bruner's categorization of the Paradigmatic Mode (and generally dividing thought into two modes) is that all thought that does *not* fall under the purview of the Narrative Mode is Paradigmatic. Bruner claims that the psychology of subjective thought and experience, interpretation, and how the mind makes meaning had progressed very little since William James wrote "all human thinking is essentially of two kinds – reasoning on the one hand, and narrative, descriptive, contemplative thinking on the other" (James, 1902). Bruner

[6] See the section on Dual Process theories in this paper for a distinction between modes as presented by Evans and Stanovich (2013) and Bruner's modes.

therefore focuses most of his explication on the Narrative Mode, bringing up the Paradigmatic Mode only in comparison.

A key aspect of Bruner's (1986) focus on the Narrative Mode is that it triggers what he calls subjunctive activity: "to be trafficking in human possibilities rather than in settled certainties" (p. 26). Stories do not contain any one specific meaning in themselves. Rather, they trigger "performances of meaning" (p. 25), or interpretive activity in which the reader generates possible meanings for themself based on the story. Important to Bruner is that stories do not state so much as imply and suggest, allowing the reader to "transform the action of the verb from being a *fait accompli* to being psychologically in process, and as such contingent or subjunctive" (p. 29). The tools of the Narrative Mode are all methods of implicature in discourse, such as Gricean maxims (Grice, 1975), which like any system of rules is made to be broken: artful violations encourage the reader to fill in what was left unsaid (p. 26). A primary activity of the Narrative Mode, then, is the generation of possible interpretations, generally in response to cues from a storyteller. The reader becomes "a composer of a virtual text in response to the actual… it is the reader who must write for himself what he intends to do with the actual text" (p. 24), leading to "conclusions not about certainties… but about the varying perspectives that can be constructed to make experience comprehensible" (p. 37).

3.3 Implications and Applications of 2M

2M is a theory of the mind, not an approach[7] or observation about tendencies. When Bruner states that his modes are "modes of thought," "modes of cognitive functioning" and "ways of ordering experience" (p.11), this is a claim about the basic

[7] E.g., Fisher, W. R. (1985). The narrative paradigm: An elaboration. Communication Monographs, 52(4), 347–367. https://doi.org/10.1080/03637758509376117

structure of the mind, which can contradict or fit with other theories, explain phenomena and make empirical predictions. Notably, 2M does not exclusively describe patterns of conscious reasoning. Both the Paradigmatic and Narrative modes include heuristic thinking and slower, more deliberate thinking (see the section on dual-process theories below).

Perhaps I have convinced you not to discard Bruner's theory by default, but what does it add? Bruner's postulation of a Narrative Mode of thought as a basic feature of the mind is what gives 2M more explanatory potential than related narrower and wider scope theories of the mind. While narrower theories such as TT explain certain features of narratives, they do not explain all observed effects of narratives on the mind (i.e., improved learning, improved social functioning, the ability to alter personal identity), and they do not explain the prevalence of narratives in human life, from art, to political messaging, to everyday discourse, across all cultures and potentially dating back to our early hominid ancestors (Donald, 1991). Bruner's 2M seems to offer an explanation for another phenomenon: why people sometimes talk past each other in debate. Consider the situation described by Adler (2008): Were the psychiatrists and researchers on one side, with their research reports and models, so deeply engaged in Paradigmatic Mode thinking that they were unable to consider the lived experience of those whose lives they were describing? And were those very people who were the subject of these studies (and their sympathizers) so deeply engaged in Narrative Mode thinking that no amount of empirical data could shake them? Adler, like many others, invoked Bruner's intuitively-appealing division of the mind to explain this situation. 2M may be in part or wholly wrong; but if so, it is worth it to spend the time and energy determining exactly why and how.

4 The Narrower Scope Theory: Transportation

Transportation Theory (Green & Brock, 2000) is congruent with 2M. It proposes a type of immersive, engaged experience with the narrative, which the authors call transportation: "an integrative melding of attention, imagery, and feelings" (Green, 2004), conceptually similar to the concepts of flow (Csikszentmihalyi, 1990), narrative presence (Busselle & Bilandzic, 2009), absorption (Graesser, 2002) and immersion (Wang and Calder 2006). Readers experience a psychological distancing from the real world, sometimes forgetting facts in favor of attributes of the narrative world. TT is one of several theories based on the premise that narratives are processed differently than other types of messaging aimed at persuasion. It thereby offers nuance to classical theories of persuasion, such as ELM (Petty & Cacioppo, 1986).

Various studies of narrative persuasion have found an association between transportation and the amount of persuasion in the reader (Schreiner et al., 2018; Appel & Richter, 2007, Vaughn et al., 2009, Appel & Richter, 2007, Green, 2004, Green & Brock, 2000). Green and Brock's (2000) Transportation Scale is used to measure the degree to which a participant experienced transportation during a narrative. Some have found evidence against the role of transportation in narrative persuasion: Moyer-Gusé and Nabi (2010), for instance, found that higher scores on the Transportation Scale increased tendency to counterargue. Oliver et al. (2012) found potential problems with the construct validity of the Transportation Scale. Generally, however, TT remains a viable theory of how narratives persuade, offering more nuance than general theories of persuasion, and being cited by current works (e.g., Breithaupt et al., 2018; Costabile et al., 2018; Samur et al., 2018; Keven, 2016; see van Laer et al., 2014 for an excellent summary and review of the literature on TT).

Proposed mechanisms of TT include reducing the reader's likelihood to mentally argue against story claims (counterargue), giving the reader a life-like experience which,

like a real experience, can change the outlook of the reader, and creating affinity to characters, thereby making the reader more sympathetic to those characters' beliefs. The authors suggest that the "believing is prior" theory by Gilbert (1991) plays a role in transportation-mediated narrative persuasion. This theory states that in order to comprehend something (including narratives), one must believe it first to be true, then put additional cognitive resources into disbelieving it. Green (2004) also cites 2M as a basis for transportation, suggesting that it occurs in a Narrative Mode of thought, where narrative messages are "held to different truth standards than rhetorical methods." Mental imagery is a key element of transportation (Appel & Mara, 2013; Green & Brock, 2002), which some suggest uses up working memory resources, leaving little remaining for the hard work of assessing a logical argument. Individual differences in "transportability" (Busselle & Bilanzic, 2009) may mediate the effect of transportation.

TT is not completely incompatible with dual-process theories of persuasion, though it does state some key differences, specifically with ELM. Green and Brock (2000) explicitly state that transportation is specific to the processing of narratives and creates persuasion differently than ELM: "Elaboration leads to attitude change via logical consideration and evaluation of arguments, whereas transportation may lead to persuasion through other mechanisms" (Green and Brock, 2000). Beyond these different mechanisms, TT offers some nuance to DP theories of persuasion. DP theories predict stronger persuasion effects from video narratives over text due to increased salience of the medium, while TT would predict stronger persuasion from narrative text due to more generation of mental imagery in the reader, thereby increasing transportation (Braddock & Dillard, 2016).

TT is not reliant on 2M, but it is compatible with and uses 2M to help explain the persuasive effects of transportation in narratives. One theoretical point in common is

the psychological distancing experienced during transportation and Bruner's conception of narrative events that are "psychologically in process" (Bruner, 1986, p. 29). Green and Brock (2000) state that when experiencing transportation, "the reader loses access to some real-world facts in favor of accepting the narrative world that the author has created… a subjective distancing from reality." 2M and TT also share a key premise: that narratives are processed in a special way. 2M goes a step further by suggesting that not only are narratives special, but the mind has a special mode devoted to processing narratives.

5 The Wider Scope Theory: Elaboration Likelihood Model (ELM)

The elaboration likelihood model (ELM; Petty & Cacioppo, 1986) is a theory of attitude change, or persuasion, that posits a central route and a peripheral route of processing. These routes signify two ends of a continuum of the amount of thought, or elaboration, involved in the processing of an argument or message (Petty & Cacioppo, 1986). ELM is a dual-process (DP) theory. To put this theory into context, I will describe DP theories, then describe ELM in more detail and discuss how it would explain narrative persuasion effects.

5.1 Dual-process Theories

DP theories are a family of theories attributed to a variety of authors that postulate a similar idea: the mind is divided into two types of processes, one fast, intuitive, associative, and requiring fewer resources, the other one (relatively) slow, deliberate, reflective and resource-heavy (Evans & Stanovich, 2013; Kahneman, 2011). Evans and Stanovich (2013) offer a more specific distinction: Type 1 processes are a series of autonomous processes that do not require working memory, while Type 2 processes involve working memory, are correlated with higher general intelligence, and

involve a cognitive decoupling of real and imagined representations of the world for abstract thought. While DP theories are controversial and have received much criticism (e.g., Kruglanski & Gigerenzer, 2011), they have also received much support (see: Xu, 2017; Evans & Stanovich, 2013) and play an active role within the sciences of the mind (e.g., Caldas et al., 2019; Calanchini et al., 2018; Gronchi & Giovannelli, 2018).

DP has various fields of application, including psychology of learning and social psychology. Evans and Stanovich (2013), who apply it to the psychology of judgment and decision-making, ascribe to a default-interventionist model, in which Type 1 thinking is generally heuristic and will make quick, associative judgments as long as nothing in the situation triggers Type 2 thinking to take a closer look with more reflective, deliberate reasoning. A quintessential example is the base rate fallacy. Give a description of a man with bookish qualities and ask: is he more likely to be a librarian or a farmer? Most people answer librarian, despite the fact that the odds of any one person being a farmer are much higher. This is attributed to Type 1 thinking, which took the superficially librarian-like features described of the man and produced the librarian answer, without triggering Type 2 thinking to take a closer look. If information about the number of farmers and number of librarians in the country is made readily available, people answer more rationally, supposedly due to the statistical information triggering Type 2 thinking (Kahenman, 2011).

5.2 Distinguishing Types and Modes

Evans and Stanovich (2013) distinguish between *types* and *modes* of cognition. They suggest that modes describe different parts of a continuum for how people tend to apply Type 2 thinking, termed "cognitive styles" or "thinking dispositions," which lead to Type 2 thinking being applied in a "slow and careful" or "quick and casual manner or any point in between" (Evans and Stanovich, 2013). The amount of effort an individual

is prone to putting into Type 2 processing varies depending on personality and is assessed by scales such as the Need for Cognition (Cacioppo & Petty, 1982) and Active Open Minded Thinking (Svanovich & West, 1997). Evans and Stanovich (2013) are clear on modes applying only to ways of applying Type 2 thinking, with only secondary implications for Type 1 thinking, if at all.

Bruner's modes in 2M are not two styles of Type 2 thinking; rather, each of Bruner's modes likely involves both Types. One of Bruner's main points is that judgment and decision-making research has focused exclusively on thinking in the Paradigmatic Mode. In the base rate fallacy example described above, DP theories suggest that people jump to an associative conclusion about the man described using Type 1 thinking, which 2M posits happens all in the Paradigmatic Mode. Presented with base rates of farmers and librarians in the US, people switch to careful Type 2 thinking; but within 2M's framework, this is still Paradigmatic Mode thinking. Complicating matters, the description of the man could be processed as a small narrative, triggering 2M's Narrative Mode. Bruner (1986) is unspecific about when and how his Modes are applied, and whether quick switching between them is possible. The Narrative Mode, like the Paradigmatic Mode, would involve both of DP's types of thinking: A good story likely puts a listener into a state of ease, predisposing the reader to Type 1 thinking (Kahneman, 2011); but a queue from the story, potentially a breaking of expectation – a common, if not required plot device in a good story (Breithaupt et al., 2018; Abbott, 2008; Bruner, 1986) – could trigger reflective, Type 2 thinking, still within the Narrative Mode. The prime suspect in the murder mystery is found dead only halfway through the story. The reader wonders: why? What did I miss?

Suffice to say, 2M's Modes are not the modes sometimes described in DP theories. How exactly to classify 2M's modes is unclear: they may represent their own

types and thus make it incompatible with DP, or they may be more like Jerry Fodor's modules (Fodor, 1987), or have their own, as-yet undetermined characteristics. This level of analysis, while important for the theoretical conceptualization of 2M, will remain outside the scope of this paper. More significant for my point is the comparison with ELM.

5.3 Elaboration Likelihood Model (ELM)

ELM is a theory[8] that posits "low" (peripheral route) and "high" (central route) processes of cognition, which correspond to Type 1 and Type 2 processes (Caldas et al., 2019). The lower processes, via the peripheral route, include classical conditioning and emotionally evocative stimuli. These produce "weak" attitude changes in the short term, privy to change soon after, though repeated exposure can potentially create stronger, more long-lasting change (Petty & Briñol, 2014). Higher processes, via the central route, engage conscious thinking and can lead to stronger, more long-lasting attitude changes, *if* the argument is strong; weak arguments are dismantled by greater elaboration and are less likely to persuade.

The main factors that determine persuasion in an argument, then, are the level of elaboration someone gives (or is able to give to the argument) and the strength of the argument (Petty & Cacioppo, 1986), though potential mediating factors such as individual variance in likelihood to elaborate (Cacioppo & Petty, 1982) and personal relevance of the issue (Caldas et al., 2019) have been the subject of much follow-up research. People who are not paying much attention to the argument or message can be swayed by appeals to the peripheral route: for instance, when someone is watching

[8] ELM is both a theory and a model. It is a theory that offers a detailed explanatory process in terms of the theoretical dimensions and mediators of how attitudes can be changed, aided by a model of that process.

television ads but is also distracted or in a pleasant mood and a star athlete tells the viewer to buy a razor, the viewer may be less likely to consider the argument (which is, essentially: because we say so, because this athlete likes it). If the viewer has reasons to truly consider the argument (for instance, if they are responsible for purchasing razors for a hospital), they might carefully consider whether that athlete has the best taste in razors, or if that athlete even had to like the product at all in order to do a well-paid advertisement. Research has supported the validity of ELM (see: Petty & Wegener, 1999) and it continues to be considered one of the principal theories to explain persuasion (Caldas et al., 2019; Xu, 2017; van Laer et al., 2014). Transportation of the type proposed by TT is not among the mediating factors that have been supported by proponents of ELM (van Laer et al., 2014).

6 Reconciling ELM, TT and 2M

While ELM provides a good explanation for most instances of persuasion, it has trouble explaining the persuasive effects of narratives. Consider a reader who, after reading a narrative, demonstrates a shift towards narrative-consistent beliefs that contradict real-world facts (i.e., Appel & Richter, 2007). ELM aims to explain narrative persuasion in terms of peripheral and central route processing, taking as main variables the strength of the argument presented and how motivated or capable the reader was to carefully evaluate that argument. In the case of narrative persuasion towards false beliefs (assuming the absence of a strong argument), it would suggest that the reader did not give much focus to assessing the argument, whether due to a lack of motivation or cognitive resources. ELM has a difficult time showing this in cases of narrative persuasion: narratives tend to be more engaging than non-narratives (Dahlstrom, 2014; Slater & Rouner, 2002), which Appel & Richter (2007) found with their stimuli as well. It is possible that narratives engage attention to peripheral features while simultaneously

distracting from the message, leading to mainly peripheral processing of the argument; but this is unlikely, given that narratives are effective in changing attitudes without hiding the message from the reader (Tamul & Hotter, 2019; Appel & Mara, 2013; Moyer-Gusé & Nabi, 2010), with some indications that the reader is deeply engaged with the message of narratives (Slater, 2002). ELM also predicts that after a narrative message persuades a reader following a one-time exposure (primarily via the peripheral route), people will soon revert back to their original beliefs. However, Appel and Richter (2007) found that narrative persuasion effects were sustained after a two-week interval, with higher confidence after two weeks than when queried immediately after exposure (exhibiting what they call a sleeper-effect). The authors suggest that experiential states (such as transportation) and the affect of the readers explain the persuasion effects they found better than elaboration on the argument contained in the narrative.

The shortcoming of ELM in explaining narrative persuasion was one of the factors that prompted the development of narrative-specific theories to explain this effect. Several of these theories are based on TT and have theoretical similarities to 2M (Schreiner et al., 2018; van Laer et al., 2014; Appel & Mara, 2013; Slater & Rouner, 2002; Green and Brock, 2000). One of these theories, the extended-ELM (Slater and Rouner, 2002; expanded into the EORM framework by Moyer-Gusé & Nabi, 2010), essentially fuses TT and ELM, suggesting that engaged (or transported) individuals are less prone to counterargue with (elaborate on) a message, even while directing a high amount of focus to it. The extended transportation-imagery model (Van Laer et al., 2014) is another derivative of TT that integrates the mental state of the storyteller into the model of persuasion.

Schreiner et al. (2018) added nuance to the narrative persuasion literature with their finding of an interaction between argument strength and transportation: stronger arguments are more persuasive in readers who experience higher transportation, but not so with weaker arguments or lower transportation. Unlike the narrative-specific theories, this supports the ELM explanation of narrative persuasion, *if* transportation is taken to imply a deep focus on the argument, leading to higher elaboration and thus higher persuasion. Taken in sum, however, this adds confusion to ELM's account of narrative persuasion. Are stronger arguments in cases of high transportation being assessed via peripheral, Type 1 processes? Or are they triggering Type 2 processing, which would suggest more elaboration, but a loss of the flow-like experience characteristic of transportation? Schreiner et al. (2018) found that individual working memory capacity did not mediate the interaction effect of argument strength on transportation, suggesting Type 2 processing was not highly involved.

2M's Narrative Mode offers another solution to the problem posed above: A Narrative Mode accommodates both Type 1 and Type 2 processes. Bruner suggests that the explanation is better put in terms of the outputs (or "truths") and processes that occur in the Narrative Mode: it seeks consistency and verisimilitude (what feels real) rather than externally verifiable facts about the world (Bruner, 1986). As Dahlstrom (2014) puts it: "the story itself demonstrates the claim," which in 2M's Narrative Mode is satisfactory to the reader. In describing the shortcomings of ELM to explain narrative persuasion, several authors (e.g., van Laer et al., 2014, Green et al., 2008) distinguish analytical from narrative persuasion, suggesting that ELM explains cases of analytical persuasion, but not narrative persuasion. This distinction, while not directly attributed to Bruner (1986), bares a strong conceptual resemblance to 2M's Paradigmatic and Narrative Modes. The theorizing by proponents of TT and its derivatives approaches the

structure of the mind presented by 2M, though none of them take the thinking so far as to make such strong claims as 2M.

Though TT and other narrative-specific theories explain some parts of the phenomena involved, 2M explains more, and more simply than both TT and ELM. While seemingly bold, 2M's legacy has endured in the logic of current theorizing on narrative effects. It makes explicit the structure of the mind implied by these narrative-specific theories and should therefore be taken seriously as a theory in need of disproving, rather than to be allowed to fade away or for its fate to remain inconclusive.

7 Conclusions and Future Directions

I have argued that Bruner's Two Modes of Thought theory (2M), which has avoided real scrutiny by psychology for nearly 40 years, deserves a closer look. It offers a more complete explanation for an observed psychological effect of narratives, narrative persuasion, than both a narrow theory of narratives, transportation theory (TT; Green and Brock, 2000), and a wider theory of the mind, the elaboration likelihood model (ELM; Petty and Cacioppo, 1986). 2M is compatible with TT and potentially with ELM, as well as other dual-process theories such as that posed by Evans & Stanovich (2013), though more conceptual work would need to be done to show whether this is true. I will conclude by recommending next steps for further evaluating 2M.

7.1 Comparison and Integration with Other Theories

Similar papers to this one could be written for other categories of narrative psychological effects, such as narrative-based improvements to learning and memory, improved social cognition, and changes to personal identity. For example, 2M could be compared to a Hutto's Narrative Practice Hypothesis (Hutto, 2007), a narrow theory of

narratives that has bearing on narrative effects on social functioning, and a wider theory of the mind that also has bearing on these effects, Dennett's Intentional Systems Theory (Dennett, 2009). The theoretical fit between 2M and other theories, both narrow and wide, would help clarify its position in theoretical space and its viability.

7.2 Conceptual Clarification

Many questions remain regarding 2M. For instance, what are modes? Though they clearly do not follow along the same distinctions as the types laid out by Evans and Stanovich (2013) for dual-process theories, are 2M's Modes also types of their own? Are they modules of the mind, as presented by Fodor (1987)? What are the dynamics of these Modes and Mode switching? Can they switch back and forth quickly? How exactly is each Mode triggered?

Beyond turning to 2M for explanation of observed narrative effects, one can ask: What new narrative effects, beyond those already mentioned, might 2M predict? What more specific predictions would 2M make, within the effects already found? Bruner suggests the Narrative Mode values congruence within the narrative over absolute truth. Are people then more likely to be persuaded by more congruent narratives? Does congruency impact persuasiveness for narratives and non-narratives differently?

The Paradigmatic Mode as described by Bruner requires serious reconsideration and possibly removal from the theory altogether. As it stands now, the Paradigmatic Mode encompasses all thought that does not fit into the Narrative Mode: judgment, belief formation, decision making, planning – anything that does not occur during the processing of a narrative. Bruner devotes the majority of *Actual Minds* to the Narrative Mode, which he says is because most of psychology to that point had already been devoted to analysis of the Paradigmatic Mode. But perhaps it is, at least in part, because his conception of the Paradigmatic Mode itself is shaky.

2M would become, then, a theory postulating a Narrative Mode of thought, implying at least one other mode but remaining agnostic to what it is specifically and to how many other modes there are. As I hope I have shown in this paper, there is evidence that narratives receive a special type of processing by the mind. A Narrative Mode of thought is one explanation for this worthy of consideration.

7.3 Narrative Thinking as a Basic Mode of Thought

Education and narrative scholars have endorsed the idea of narrative thinking as a basic mode of thought (Ropo & Yrjänäinen, 2020; Blume et al., 2015; Meretoja, 2014), as well as some communication scholars (e.g., Dahlstrom, 2014). The question that scientists who study the mind need to answer is: Does this mean narrative thinking is "baked in?" Is it a genetic, biological system that develops in most healthy individuals, in a typical, predictable way? Or are narratives a purely cultural mechanism, one that simply makes sense with our baked in, biological features? Another prominent, wide-spread human activity, music, may be an example of a practice that is not baked in (like flour), but makes for a sensible addition (like butter) with our auditory system, language and communication systems, motor coordination system, and need for social connection. Narratives, too, might be a very sensible, but purely cultural addition to our minds, given our language and communication systems, our episodic memory systems, our ability to imagine and simulate events, our theory of mind systems and our proclivity for shared sense-making.

Alex Rosenberg and Jerome Bruner have two opposing views on the role of narratives in human life, yet share an assumption of the power of narratives over the mind. Rosenberg (2016) argues that stories are an addiction for humankind; that we are easily placated by narratives and do not approach the explanations provided by narratives with the proper scrutiny. He argues that we should reject our yearnings for

narrative and turn to scientific, systematic methods of understanding, such as game theory, and regard any sort of narrative as suspect. In short: narratives feel good, but they do not provide truth. Bruner shares Rosenberg's views about the power of stories, but differs with him on the definition of truth:

> "There is an assumption, implicit to be sure, that a narrative account leaves one open to 'errors' that are departures from an aboriginal reality that is better discerned by a more systematic, 'logico-scientific' method. Can anyone say a priori that history is completely independent of what goes on in the minds of its participants? Narratives may be the last resort of the economic theorists. But they are probably the life stuff of those whose behavior we study… and thereby… constitute the psychological and cultural reality in which the participants in history actually live" (Bruner, 1986, pp. 42-43).

Bruner raised a question in 1986 that Rosenberg, in 2016, was unable to answer: Is there a kind of subjective, interpretational truth that narratives cultivate in our minds, a type of understanding that we can only gain through narratives?

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References

Adler, J. M. (2008). Two modes of thought: The narrative/paradigmatic disconnect in the Bailey book controversy. Archives of Sexual Behavior, 37(3), 422–425. https://doi.org/10.1007/s10508-008-9318-0

Appel, M., & Richter, T. (2007). Persuasive effects of fictional narratives increase over time. Media Psychology, 10, 113–134.

Appel, M., & Mara, M. (2013). The persuasive influence of a fictional character's trustworthiness. *Journal of Communication*, 63, 912–932.

Barthes, R. (1966). "Introduction à l'analyse structurale des récits", *Communications, 8*(1), 1–27

Bal, P. M., & Veltkamp, M. (2013). How does fiction reading influence empathy? An experimental investigation on the role of emotional transportation. PloSone, 8(1), e55341.

Black, J., & Barnes, J. L. (2015). Fiction and social cognition: The effect of viewing award-winning television dramas on theory of mind. Psychology of Aesthetics, Creativity, and the Arts, 9(4), 423–429. https://doi.org/10.1037/aca0000031

Blume, H., Leitgeb, C., & Rössner, M. (Eds.). (2015). *Narrated Communities – Narrated Realities: Narration as Cognitive Processing and Cultural Practice. Texts Waiting for History*. Leiden, The Netherlands: Koninklijke Brill NV. https://doi.org/https://doi.org/10.1163/9789004184121

Braddock, K., & Dillard, J. P. (2016). Meta-analytic evidence for the persuasive effect of narratives on beliefs, attitudes, intentions, and behaviors. Communication Monographs, 83(4), 446–467. https://doi.org/10.1080/03637751.2015.1128555

Breithaupt, F., Li, B., Liddell, T. M., Schille-Hudson, E. B., & Whaley, S. (2018). Fact vs. Affect in the telephone game: All levels of surprise are retold with high accuracy, even independently of facts. *Frontiers in Psychology, 9*(NOV). https://doi.org/10.3389/fpsyg.2018.02210

Bruner, J. (1986). Actual Minds, Possible Worlds. Cambridge, MA, USA: Harvard University Press. https://doi.org/10.1017/CBO9781107415324.004

Burnett, C. (2006). Constructions of professional knowledge among student and practising primary teachers: Paradigmatic and narrative orientations. Research Papers in Education, 21(3), 315–333. https://doi.org/10.1080/02671520600793773

Busselle, R. & Bilandzic, H. (2009). Measuring narrative engagement, *Media Psychology, 12*, 321-347. doi: 10.1080/15213260903287259

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*, 116–131

Calanchini, J., Rivers, A. M., Klauer, K. C., & Sherman, J. W. (2018). Multinomial processing trees as theoretical bridges between cognitive and social psychology. *Psychology of Learning and Motivation - Advances in Research and Theory (1st ed., Vol. 69)*. Elsevier Inc. https://doi.org/10.1016/bs.plm.2018.09.002

Caldas, L. S., Iglesias, F., Melo, I. R., & Lyra, R. L. (2019). Persuasion at Different Levels of Elaboration: Experimental Effects of Strength, Valence and Ego Depletion. *Temas Em Psicologia, 27*(2), 585–599. https://doi.org/10.9788/tp2019.2-20

Chaiken, S. (1987), "The Heuristic Model of Persuasion," in Zanna, M.P., Olson, J.M., and Herman, P.C. (Eds.), *Social Influence: The Ontario Symposium*, Vol. 5, Hillsdale, NJ: Erlbaum, 3–39.

Cheney, L. C., Kohler, C., & Muilenburg, J. L. (2006). A woman in transition: Can drama deliver a cancer awareness message? *Journal of Cancer Education, 21*, 129–132. doi:10.1207/ s15430154jce2103_7

Costabile, K. A., Shedlosky-Shoemaker, R., & Austin, A. B. (2018). Universal stories: How narratives satisfy core motives. *Self and Identity*, *17*(4), 418–431. https://doi.org/10.1080/15298868.2017.1413008

Curtis R (1994) Narrative form and normative force—Baconian storytelling in popular science. Soc Stud Sci 24(3):419–461.

Dahlstrom, M. F., & Scheufele, D. A. (2018). (Escaping) the paradox of scientific storytelling. PLoS Biology, 16(10), e2006720. https://doi.org/10.1371/journal.pbio.2006720

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. Proceedings of the National Academy of Sciences. https://doi.org/10.1073/pnas.1320645111

Dahlstrom, M. F. (2012). The Persuasive Influence of Narrative Causality: Psychological Mechanism, Strength in Overcoming Resistance, and Persistence Over Time. Media Psychology, 15(3), 303–326. https://doi.org/10.1080/15213269.2012.702604

Dennett, D. (2009). Intentional Systems Theory. In A. Beckermann, B. P. McLaughlin, & S. Walter (Eds.), The Oxford Handbook of Philosophy of Mind. https://doi.org/10.1093/oxfordhb/9780199262618.003.0020

Djikic, M., Oatley, K., Zoeterman, S., & Peterson, J. B. (2009). On being moved by art: How reading fiction transforms the self. Creativity Research Journal, 21(1), 24–29. https://doi.org/10.1080/10400410802633392

Donald, M. (1991). Origins of the modern mind: Three stages in the evolution of culture and cognition. Cambridge, MA: Harvard University Press

Fodor, J.A. 1983. The modularity of mind. Cambridge, MA: MIT Press.

Gerrig, R. J., & Prentice, D. A. (1991). The representation of fictional information. Psychological Science, 2, 336–340

Gesser-Edelsburg, A., & Endevelt, R. (2011). An entertainment-education study of stereotypes and prejudice against fat women: An evaluation of fat pig. Health Education Journal, 70, 374–382. doi:10.1177/0017896911414043

Graesser AC, Olde B & Klettke B. (2002) How does the mind construct and represent stories? In Green MC, Strange JJ, Brock TC (eds.), *Narrative Impact: Social and Cognitive Foundations*, (Lawrence Erlbaum, Mahwah, NJ), pp 229–262.

Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. The Effects of Personal Involvement in Narrative Discourse: A Special Issue of Discourse Processes. https://doi.org/10.1207/s15326950dp3802_5

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701–721. https://doi.org/10.1037/0022-3514.79.5.701

Green, M.C., Kass, S., Carrey, J., Herzig, B., Feeney, R and Sabini., J. (2008). Transportation across Media: Repeated Exposure to Print and Film. *Media Psychology*, 11 (4), 512–39.

Gronchi, G., & Giovannelli, F. (2018). Dual process theory of thought and default mode network: A possible neural foundation of fast thinking. *Frontiers in Psychology, 9*(JUL), 2005–2008. https://doi.org/10.3389/fpsyg.2018.01237

Heider, F. and Simmel, M. (1944). An Experimental Study of Apparent Behavior. *American Journal of Psychology, 57*

Hutto, D. D. (2007). The narrative practice hypothesis: Origins and applications of folk psychology. In Hutto, D. (Ed.), *Narrative and Understanding Persons: Royal*

Institute of Philosophy Supplement: 60 (pp. 43–68). Cambridge University Press. https://doi.org/10.1017/CBO9780511627903.004

Igartua, J. J., & Vega Casanova, J. (2016). Identification with Characters, Elaboration, and Counterarguing in Entertainment-Education Interventions Through Audiovisual Fiction. Journal of Health Communication, 21(3), 293–300. https://doi.org/10.1080/10810730.2015.1064494

James, W. (1902). The Varieties of Religious Experience: A Study in Human Nature; being the Gifford Lectures on natural religion delivered at Edinburgh in 1901-2. New York: Longmans, Green.

Jensen, J.D., Bernat, J.K., Wilson, K.M. and Goonewardene, J. (2011). The Delay Hypothesis: The Manifestation of Media Effects Over Time. *Human Communication Research, 37*: 509-528. doi:10.1111/j.1468-2958.2011.01415.x

Johnson, D. R. (2012). Transportation into a story increases empathy, prosocial behavior, and perceptual bias toward fearful expressions. Personality and Individual Differences, 52(2), 150–155. https://doi.org/https://doi.org/10.1016/j.paid.2011.10.005

Johnston, H. (2012). The Spiral Curriculum. Accessed: 14 July, 2020. Available: https://web.archive.org/web/20180625030637/http://oregongearup.org/sites/oregongearup.org/files/research-briefs/spiralcurriculum.pdf

Kahneman, D. (2011). Thinking, Fast and Slow. London: Macmillan.

Keven, N. Events, narratives and memory. *Synthese* 193**,** 2497–2517 (2016). https://doi.org/10.1007/s11229-015-0862-6

Kratz, D. M. (2020). Memory and its Fictions. Athenaeum Review, Winter 202(3), 10–18.

Kruglanski, A. W., & Gigerenzer, G. (2011). Intuitive and deliberative judgements are based on common principles. *Psychological Review, 118*, 97–109.

Liu, H. C., & Chuang, H. H. (2011). Investigation of the impact of two verbal instruction formats and prior knowledge on student learning in a simulation‐based learning environment. Interactive Learning Environments, 19(4), 433–446. https://doi.org/10.1080/10494820903356940

Mar, R. A. (2004). The neuropsychology of narrative: Story comprehension, story production and their interrelation. Neuropsychologia, 42(10), 1414–1434. https://doi.org/10.1016/j.neuropsychologia.2003.12.016

Meretoja, H. (2014). The Narrative Turn in Fiction and Theory: The Crisis and Return of Storytelling from Robbe-Grillet to Tournier. In T. Baldwin, B. Hutchinson, & S. Weller (Eds.), *Palgrave Studies in Modern European Literature*. Palgrave Macmillan.

Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. Human Communication Research, 36(1), 26–52. https://doi.org/10.1111/j.1468-2958.2009.01367.x

Oatley, K. (2012). The cognitive science of fiction. Wiley Interdisciplinary Reviews: Cognitive Science, 3(4), 425–430. https://doi.org/10.1002/wcs.1185

Oatley, K. (1999). Why Fiction May Be Twice as True as Fact. Review of General Psychology, (May), 1–17. Retrieved from papers2://publication/uuid/FED1605E-6065-42B2-8331-BE70EC7516DB

Oliver, M. B., Dillard, J. P., Bae, K., & Tamul, D. J. (2012). The effect of narrative news format on empathy for stigmatized groups. *Journalism and Mass Communication Quarterly, 89*(2), 205–224. https://doi.org/10.1177/1077699012439020

Palmer, J. (2001). Fifty Modern Thinkers on Education: From Piaget to the Present. Taylor & Francis Inc. ISBN 978-0-415-22409-3.

Petty, R.E. and Cacioppo, J.T. (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*, New York: Springer.

Petty, R. E., & Wegener, D. T. (1999). The Elaboration Likelihood Model: Current status and controversies. In Chaiken, S. & Trope, Y. (Eds.), *Dual process theories in social psychology* (pp. 41-72). New York: Guilford Press.

Prati, G., Pietrantoni, L. & Zani, B. (2012) Influenza Vaccination: The Persuasiveness of Messages Among People Aged 65 Years and Older, *Health Communication, 27*:5, 413-420, DOI: 10.1080/10410236.2011.606523

Prins, R., Avraamidou, L., & Goedhart, M. (2017). Tell me a story: The use of narrative as a learning tool for natural selection. Educational Media International, 54(1), 20–33. doi:10.1080/09523987.2017. 1324361

Riley, A. H., Sood, S., & Sani, M. (2019). Narrative Persuasion and Social Norms in Entertainment-Education: Results from a Radio Drama in Mozambique. Health Communication, 0(00), 1–10. https://doi.org/10.1080/10410236.2019.1606137

Ropo, E., & Yrjänäinen, S. (2020). Narrativity in Instructional Communication. In The Handbook of Applied Communication Research (Vol. 2). John Wiley & Sons, Inc.

Rosenberg, A. (2016). How History Gets Things Wrong: The neuroscience of our addiction to stories. MIT Press: Cambridge, MA.

Samur, D., Tops, M., & Koole, S. L. (2018). Does a single session of reading literary fiction prime enhanced mentalising performance? Four replication experiments of Kidd and Castano (2013). *Cognition and Emotion*, *32*(1), 130–144. https://doi.org/10.1080/02699931.2017.1279591

Shen, F., & Han, A. (2014). Effectiveness of entertainment-education in communicating health information: A systematic review. Asian Journal of Communication, 24(6), 605–616. doi:10. 1080/01292986.2014.927895

Slater, M. D. (2002). Entertainment Education and the Persuasive Impact of Narratives. In Green, M., Strange J. & Brock, T. C. (Eds.). (2002). *Narrative impact : social and cognitive foundations*. Mahwah, NJ: Lawrence Erlbaum Associates, 157–81.

Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory, 12*, 173–191.

Stanovich, K. E., & West, R. F. (1997). Reasoning independently of prior belief and individual differences in actively open-minded thinking. *Journal of Educational Psychology, 89*, 342–357.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124-1131.

van Laer, T., de Ruyter, K., Visconti, L. M., & Wetzels, M. (2014). The Extended Transportation-Imagery Model: A Meta-Analysis of the Antecedents and Consequences of Consumers' Narrative Transportation. *Journal of Consumer Research*, *40*(5), 797–817. https://doi.org/10.1086/673383

Vaughn, L. A., Hesse, S. J., Petkova, Z., & Trudeau, L. (2009). The story is right on: The impact of regulatory fit on narrative engagement and persuasion. *European Journal of Social Psychology, 39*, 447-456. doi: 10.1002/ejsp.570

Wang, J. and Calder, B.J. (2006). Media Transportation and Advertising. *Journal of Consumer Research, 33*(2), 151–62

Wojcieszak, M., & Kim, N. (2016). How to Improve Attitudes Toward Disliked Groups: The Effects of Narrative Versus Numerical Evidence on Political Persuasion. Communication Research, 43(6), 785–809. https://doi.org/10.1177/0093650215618480

Xu, Q. (2017). Dual Process Models of Persuasion. In P. Rössler, C. A. Hoffner, & L. van Zoonen (Eds.), *The International Encyclopedia of Media Effects (pp. 1–13)*. John Wiley & Sons, Inc. https://doi.org/10.1002/9781118783764.wbieme0074

Yan, Y., & Liu, J. (2016). Effects of Media Exemplars on the Perception of Social Issues with Pre-Existing Beliefs. Journalism and Mass Communication Quarterly, 93(4), 1026–1049. https://doi.org/10.1177/1077699