What Happens in Vegas Stays on TripAdvisor?

A Theory and Technique to Understand Narrativity in Consumer Reviews

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ABSTRACT

Many consumers base their purchase decisions on online consumer reviews. An overlooked feature of these texts is their narrativity: the extent to which they tell a story. The authors construct a new theory of narrativity to link the narrative content and discourse of consumer reviews to consumer behavior. They also develop from scratch a computerized technique that reliably determines the degree of narrativity of 190,461 verbatim, online consumer reviews and validate the automated text analysis with two controlled experiments. More transporting (i.e., engaging) and persuasive reviews have better developed characters and events as well as more emotionally changing genres and dramatic event orders. This interdisciplinary, multimethod research should help future researchers (1) predict how narrativity affects consumers' narrative transportation and persuasion, (2) measure the narrativity of large digital corpora of textual data, and (3) understand how this important linguistic feature varies along a continuum.

Keywords: automated text analysis, computational linguistics, consumer reviews, narrative persuasion, narrative transportation, storytelling

> "This is definitely an unusual thing to do in Las Vegas, but can be a wonderful change of pace. If you are into CSI and like solving mysteries, this is for you. If you'd rather just kick back, this might be a bit much. Max seemed nervous at first with lots of 'uhhh's and ummmms [*sic*], but warmed up quickly. The mystery started out slow ... which might be natural, but picked up pace and excitement as the night went on. And it did go on ... from 7pm to well past 10pm. Very exciting and worth the effort we put into it."

Sixty-nine percent of consumers indicate that they base their purchase decisions on online consumer reviews (Nielsen 2015), such as the above review of *Mystery Adventures*, a live action role-playing game organized in Las Vegas. These texts are therefore one of the most influential forms of word of mouth (henceforth WOM). In reviews, ordinary consumers (i.e., reviewers) write about purchases, and web hosting sites aggregate these evaluative texts into an organized format (McQuarrie, McIntyre, and Shanmugam 2015). Most hosting sites offer consumers the option to respond to and evaluate reviews. For example, Yelp asks consumers whether reviews are useful, funny, or cool, whereas on TripAdvisor, each review is followed by a button to thank the reviewer with a thumbs-up gesture. This positive feedback, that is, the attitudinal response to the review, may raise a review's ranking and visibility on the sites and may change consumers' purchase attitudes and decisions (Moore 2015).

The literature on WOM language explores how reviews persuade consumers (Berger 2014). According to this literature, persuasion can stem from two sources outside of the consumer: (1) contextual cues or (2) the review text: its claims, arguments, and explanations (Moore 2015). If consumers rely on contextual cues, whether they give positive feedback may depend on the review's age (Chen and Lurie 2013), eloquence (Vásquez 2014), extremity (Ludwig et al. 2013), length (Pan and Zhang 2011), and readability (Ghose and Ipeirotis 2011),

as well as the reviewer's expertise (Godes and Mayzlin 2004). If consumers scrutinize the review text, their evaluation tends to be more positive, the more they feel certain about their attitude toward the reviewed purchase. As Moore (2015) shows, consumers give more positive feedback when actions and reactions are well explained.

However, as Jurafsky et al. (2014) maintain, many review texts do not (only) contain contextual cues, overt claims, and arguments; instead, they are "overwhelmingly focused on narrating experiences … rather than discussing." These reviews are stories: accounts of a sequence of events leading to a transition of a character from an initial state to a later state (Bennett and Royle 2004) in which the reviewer is often the main character. In contrast to more typical narrative forms—such as novels, movies, or TV series—the short length of reviews does not encourage consumers to forget that the setting is pure fiction. Some recent research into reviews acknowledges though that narrative elements, such as time (Chen and Lurie 2013) and emotion words (Villarroel Ordenes et al. 2017), influence consumer behavior. Yet, narrativity, or the extent to which a text tells a story (Sturgess 1992), remains an overlooked feature of reviews. Given this, we aim to explain how reviews' narrativity leads them to engage and persuade consumers.

There are four theoretical foundations of narrativity, here represented by the notions of narrative content, discourse, transportation and persuasion. Narrative content and discourse are the linguistic antecedents of narrativity. Narrative content reflects the linear sequence of events as characters live through them, that is, the backbone and structure describing who did what, where, when, and why (Fludernik 2009). Narrative discourse represents how the story is told, that is, reviewers' use of literary devices to expand on the narrative content (Culler 2002), such as emotional change over the course of the story line and sequencing of events to create drama.

Narrative transportation is the engrossing, transformational experience of being swept away by a story (Gerrig 1993; Green and Brock 2000; van Laer et al. 2014). Narrative persuasion is the effect of narrative transportation, which manifests itself in consumers' positive attitudes toward the story, story-consistent attitudes toward the experience described therein, and story-consistent intentions (Argo, Zhu, and Dahl 2008; Escalas 2007; Wang and Calder 2006). We suggest that the higher the quality of narrative content and discourse in a text, the greater its narrativity and its consumption implications, such as narrative transportation and persuasion.

Integrating previous literature on narrative content, discourse, transportation and persuasion, we build a conceptual framework in which linguistics and cognitive psychology cross-fertilize this field of inquiry. Doing so facilitates both the emergence of our implicit assumptions and the elaboration of a theory of narrativity that is broader in scope than the various perspectives in the field. Narratology, or the study of stories, appreciates stories by means of a holistic examination of their content, discourse, and context (Stern, Thompson, and Arnould 1998). In line with this appreciation, our theory helps combine the "basic rules of narrative accounting" (Gergen and Gergen 1988, 30) with a perceptual view of stories' consumption, relevance, and effects (Carpenter and Green 2012). In other words, we pay attention to what stories are as well as what stories do. Specifically, our interdisciplinary, multimethod research has three objectives to fill several gaps in the narratology and WOM language literatures:

First, extant empirical findings essentially remain limited to narrative content, while the broader notion that narrative discourse pervades and patterns stories as bodies of texts is thus far merely theoretical. That is to say, the narratological literature tends to focus on descriptions of the characters and events without empirically confirming that, in Vonnegut's (2005) terms,

"stories have shapes which can be drawn on graph paper" and, as Stern (1997) argues, storytellers hold the power to determine the order in which events will be mentioned. We wish to establish what and how narrative elements predict the persuasiveness of consumer reviews. Therefore, the first objective of this research is to verifiably test whether stories' emotional shapes (genre) and event orders (drama) are crucial components of transporting and persuasive reviews.

Second, where recent advances in automated text analysis provide new, more efficient ways of gauging consumers' behavior from their use of natural language (Humphreys and Wang 2018), including techniques that detect levels of analytical thinking (Pennebaker et al. 2015), consumer sentiment (Cohn, Mehl, and Pennebaker 2004; Villarroel Ordenes et al. 2017), deception (Ludwig et al. 2016; Newman et al. 2003), and social orientation (Kacewicz et al. 2014), these approaches do not allow the assessment of narrativity. Consumer researchers could depend on such a technique to indicate this linguistic feature time and again. Therefore, the second objective of this research is to develop a computerized technique that reliably determines a text's degree of narrativity and validate it with two controlled experiments.

Third, noting the body of research comparing nonnarrative with narrative texts and finding mean-level differences in narrative transportation and persuasion between experimental conditions (for a meta-analysis, see van Laer et al. 2014), a natural level of concern arises about the external validity of these effects. The virtue of these experiments is that they allow for controlled manipulation of specific narrative elements that switch on narrative transportation and persuasion like a light switch; the drawbacks are that they can be dismissed as solely internally valid and do not acknowledge that some texts represent a brighter manifestation of "story" than others. We intend to show that narrativity is a continuum. Therefore, the final objective of this

research is to externally validate these prior substantial contributions with a rigorous field study of nearly 200,000 online reviews in consumers' own words.

A THEORY OF NARRATIVITY

Extant research in cognitive psychology (Bruner 1986; Green and Brock 2000, 2002) and consumer research (Phillips and McQuarrie 2010) demonstrates that a story can engross consumers in a narrative world, a transformational experience which is captured and conceptualized in narrative transportation: "the extent to which (1) a consumer empathizes with the story characters and (2) the story plot activates his or her imagination, which leads him or her to experience suspended reality during story reception" (van Laer et al. 2014, 799-800). The outcome of having been transported into a narrative world is narrative persuasion (Escalas 2007; Green and Brock 2002). Transporting stories are perceived to be like real-life experiences (Green and Brock 2000). In the context of reviews therefore, narrative transportation leaves consumers with the perception that their resulting evaluation is based on direct experience, which typically makes novel information easier to understand and seemingly intuitively truthful (Marsh and Fazio 2006).

Thus, narrative transportation leads to a positive attitude toward the review. Giving positive feedback on the review is the manifestation of consumers' positive attitudes toward the review. The foretaste feature of narrative transportation also facilitates the formation of story-consistent attitudes and intentions (Argo et al. 2008; Escalas 2007; Wang and Calder 2006). A positive attitude toward the review therefore predicts an attitude toward the reviewed product or service in harmony with the story's valence. Given that consumers typically show purchase

intentions consistent with their attitudes (Fazio and Zanna 1981), attitudes toward the reviewed product or service extend to similar purchase intentions (Chen, Dhanasobhon, and Smith 2008; Moore 2015).

The extent to which consumers experience narrative transportation and are "lost" in the narrative world (Nell 1988) depends on the level of narrativity of a review text. Narratologists distinguish two components of narrativity: content and discourse (Culler 2002; Fludernik 2009). The difference between narrative content and narrative discourse is the difference between what is conveyed and how it is conveyed (Chatman 1978). The features of narrative content align with the structural components of a story (i.e., characters and events). Literary devices, which grant storytellers the power to frame the narrative, are associated with narrative discourse. Variations in these narrative elements are likely to affect transportation into the narrative and subsequent persuasion, as we detail in the conceptual framework in figure 1. We will first present narrative content elements that affect narrative transportation and persuasion. We will then review two key discourse elements that affect narrative transportation and persuasion. All narrative elements are exemplified with sentences from illustrative TripAdvisor reviews of "things to do" in Las Vegas.

Insert figure 1 about here

NARRATIVE CONTENT

Since a story captures the transition of a character from an initial state of events to a later state (Bennett and Royle 2004), some essential structural elements must be included in a text for it to be a story. Narratologists consistently affirm the relevance of four narrative content

elements: characters' landscapes of affective and cognitive consciousness (Bruner 1986; Feldman et al. 2014) and events' spatial and temporal embedding (Escalas and Bettman 2000; Thompson 1997). We conceptually develop these elements and elaborate on their relationship with narrative transportation and persuasion at the end of each paragraph.

Characters' Landscapes of Affective and Cognitive Consciousness

Following Bruner (1986), we define the landscape of affective consciousness as the extent to which a review recounts initial events about which characters express feelings that, in turn, lead to subsequent events. For example, a review of *Kà*, a circus show in Las Vegas, includes "There was a lot of action. That I love in this show [*sic*]. I would totally go see it again." Similarly, we define the landscape of cognitive consciousness as the extent to which a review recounts initial events about which characters express thoughts that, in turn, lead to subsequent events. For example, a review of *Vegas! The Show*, a musical, includes "They changed the show!!! I think the 'old' show was more complete. If they don't bring back the original show, this is my last time attending this show!" Feldman et al. (2014) show that consumers make more inferences and exert more effort to empathize with the characters when stories have well-developed landscapes of affective and cognitive consciousness, both of which may enhance narrative transportation and persuasion. Thus:

H1: The more a review's landscape of affective consciousness is developed, the greater (a) narrative transportation and (b) persuasion.

H2: The more a review's landscape of cognitive consciousness is developed, the greater (a) narrative transportation and (b) persuasion.

Events' Spatial and Temporal Embedding

Spatial embedding is the extent to which a text (1) focuses on particular spaces and (2) names its attributes, rather than develops categorizations and/or generalizations (Escalas and Bettman 2000). Spatial embedding is more narrowly defined than schemata or scripts. A schema reflects the universal knowledge of a particular domain (Alba and Hasher 1983), whereas scripts are mental representations of common events as abstractions (Abelson 1981). Consumers give low narrativity ratings to texts conforming strictly to the latter (Brewer and Lichtenstein 1981). Conversely, spatially embedded stories are not that abstract. For example, a review of *Titanic: The Artifact Exhibition* includes "They have lots of plates from the ship, replicas of the 'bedrooms' for the 3rd class and 1st class passengers. They have a real (freshwater) iceburg [*sic*] and a large section of the boat." While spatial embedding does not offer a concrete, detailed camera-recorded view of space, as films (Gordon, Ciorciari, and van Laer 2018) or selfies do (Farace et al. 2017), the descriptive, perceivable narrative content element does make the story plot more imaginable, transporting, and persuasive.

Temporal embedding is composed of (1) narrative movement—that is, the chronological flow of the events indicating the direction of the story—and (2) narrative framing—that is, the thematic and symbolic parallels among different events in the story (Thompson 1997). First, narrative movement organizes events in terms of a temporal dimension: events occur over time with some sort of beginning, middle, and end. Second, narrative framing establishes a network of relationships between story characters and events that allows for making causal inferences (Escalas 1998). For example, another *Vegas! The Show* review includes "The first half seemed to

drag on until the bird trainer and his buddies came on. Because they were hilarious and their performance seemed to add life to the show and energize the crowd. The second half of the show was a lot of fun!" Scholars from various disciplines, including consumer research, have debated what constitutes narrative movement and framing (Adaval, Isbell, and Wyer 2007; Adaval and Wyer 1998; Barthes 1975). They have ostensibly settled on past–present–future causal chains. This necessary narrative content element translates texts into stories with an imaginable sequence of events that can transport and persuade consumers. Thus:

H3: The higher the level at which a review is spatially embedded, the greater (a) narrative transportation and (b) persuasion.

H4: The higher the level at which a review is temporally embedded, the greater (a) narrative transportation and (b) persuasion.

NARRATIVE DISCOURSE

Reviewers play a powerful role in the discursive presentation of their story. Ultimately, they are the dominant party whose individual choices of literacy devices affect the text's narrativity beyond its content. Narratologists have addressed two key narrative discourse elements which we include in our conceptual framework: genre and drama. In the interest of brevity, we focus on the contributions that tie them to narrative transportation and persuasion.

Genre

In line with Genette (1979/1992), we define genre as a narrative discourse element: a distinctive story shape that emerges from culturally determined conventions in a given society at a given time. The earliest articulation of genre dates back to the Greek philosopher Plato (380BC/2008). The number and types of genres have been modified many times since (Stern 1995). While these modifications constitute valid classifications of genres, Reagan et al. (2016) stress that they do not allow for the elaboration of a specific hypothesis on this narrative discourse element that is testable with automated text analysis. Therefore, we turn to the genre taxonomy that Gergen and Gergen (1988) developed and that allows us to elaborate verifiable hypotheses. Their taxonomy's five basic types are progressive, regressive, stable, comedy, and tragedy. In a progressive genre, events continuously improve for characters over the course of the story line, whereas in a regressive genre, events decline over the course of the story line. In a stable genre, events neither improve nor decline emotionally. The final two genres involve emotional slopes that alternate in sign—that is, story shapes that decline and rise (or rise and then decline) over the course of the story line. When the genre is comedic, "a story is a fictional or true account of how the expectations or wishes (of a person) or the inclinations or tendencies (of a person or product) are first opposed, frustrated, or are otherwise in doubt, then in some way prevail, succeed, or are redressed" (Deighton, Romer, and McQueen 1989, 338). Thus, a comedy is a regressive slope, followed by a progressive slope. An example is the *Mystery Adventures* review with which we open the article. The opposite of this shape is a tragedy. In this genre, events first improve, but then decline. Thus, a tragedy is a progressive slope followed by a regressive slope. An example of this arc in which characters have almost attained their goal and then are brought low is a different *Mystery Adventures* review:

> "After attending, I was disappointed. First of all you have to travel off the Strip to get to the location. It would be much more convenient if they came and picked you up. I was expecting an exciting adventure but found Mystery Adventures to be dull. The first crime scene was the best. It was thought stimulating. After that, it went down hill [*sic*]."

Emotional story shapes that change over the course of a story line are arguably more engaging than those that do not alternate in sign (Vonnegut 2005). Because of comedy's downs and ups and tragedy's ups and downs, it is reasonable to expect consumers to be transported and persuaded. Following Gergen and Gergen (1988), we therefore develop precise hypotheses, to anticipate the effects of different genres on narrative transportation and consequential persuasion:

H5: Reviews with genres that display changing emotional story shapes (i.e., comedies or tragedies) lead to more (a) narrative transportation and (b) persuasion than reviews with progressive, regressive, or stable genres.

Drama

Drama is a narrative discourse element that emerges from oddities or twists in the story (Burke 1962). Both Russian formalism (Steiner 1984) and Brewer and Lichtenstein's (1982) structural-affect theory provide a possible explanation for the emergence of drama. The Russian formalists contrast the original duration and linear sequence of experienced events (the "fabula") with the final edited, ordered arrangement of such events (the "sjuzet") as they are presented. It follows from this contrast that reviewers also make choices about how to order the events in the sjuzet when crafting a review from their experiences. Brewer and Lichtenstein distinguish

between different event orders, depending on the story's guiding emotion: surprise or curiosity. Although both surprise and curiosity orders are consonant with Burke's (1962) conceptualization, the former does not create high drama. Events are recounted chronologically and build slowly towards an emotional climax, as the following *Graceland Wedding Chapel* review exemplifies:

> "On our wedding night, there we were, waiting for the limo. An hour after our wedding was to have started, still no driver. By then, I was so upset, I did not get married at Graceland Chapel! Our chapel reservation had expired!"

In contrast, a curiosity order opens with the emotional climax and stimulates consumers to engage with the narrative world in order to understand how the emotional opening came to pass. Thus, the *Graceland Wedding Chapel* review would be reordered, such that it would begin with: "I was so upset, I did not get married at Graceland Chapel! On our wedding night, there we were...." Because a curiosity order is more mentally stimulating, it is more likely to transport consumers and contribute to their persuasion than a surprise order (Nielsen and Escalas 2010). Thus:

> **H6:** A review's drama that presents the events in a curiosity order leads to more (a) narrative transportation and (b) persuasion than a surprise-order drama.

STUDY 1

Study 1 consists of an automated text analysis of TripAdvisor reviews to address hypotheses 1(b)–6(b).

Method

Sampling Frame and Parsing Procedure. We derived a corpus of reviews by accessing and parsing the publicly available HTML (Hypertext Markup Language) and XML (Extensible Markup Language) pages on http://www.tripadvisor.com. Our sample encompassed all English reviews of "things to do" in Las Vegas posted during the 15 years following TripAdvisor's founding in February 2000. We did not process reviews in natural languages other than English because of the difficulties of interlingual comparison in automated text analysis.

We chose this setting for several reasons. First, Las Vegas is the world's most popular destination with 39,013,389 annual visitors (Las Vegas Convention and Visitors Authority 2017; Love Home Swap 2015). Second, on TripAdvisor any consumer can give positive feedback on a review by thanking the reviewer with a thumbs-up gesture. The website does not allow consumers to give negative feedback. Third, reviewers post reviews of leisure travel–related purchases on TripAdvisor, which is the most inclusive, dedicated hosting site for such reviews (Scott and Orlikowski 2012). As such, reviewers make sense of their experiences by narrating the events they go through on social media (van Laer and de Ruyter 2010). Reviews on TripAdvisor are therefore stories through which consumer identities are expressed (Bennett and Royle 2004; van Laer 2014). Fourth, the website enables the control of six contextual cues at the review level that might affect positive feedback and thus narrative persuasion: review age (Chen and Lurie 2013), eloquence (Vásquez 2014), extremity (Ludwig et al. 2013), length (Pan and Zhang 2011), and readability (Ghose and Ipeirotis 2011), as well as reviewer expertise (Godes and Mayzlin 2004). Web appendix A describes these control variables in more detail.

Our final sample counted 190,461 reviews of 989 consumption experiences in Las Vegas. The reviews averaged seven sentences (SD = 4.56; ranging from 1 to 148 sentences), 90 words (SD = 90.83; ranging from 2 to 2,399 words), and .77 thumbs-up gestures (SD = 2.01; ranging from 0 to 103 gestures) and included 65.25% reviews without thumbs-up gestures. The two measures of length (i.e., sentence and word count) were significantly and positively correlated with one another ($\rho < .80$, $p < .001$). To control for review length therefore, we computed a z-score for both sentence count and word count and summed the individual scores to create one composite measure for review length, using Gino and Ariely's (2012) procedure.

Narrative Elements Operationalization. We conducted an automated text analysis of *n*-grams of multiple word lengths. A set of *n*-grams in a text is the set of all distinct sequences of *n* words (Vásquez 2014). In support of our analysis, we relied on the Linguistic Inquiry and Word Count (LIWC) software program, which Pennebaker et al. (2007) developed, as a starting point from which to operationalize our narrative elements. LIWC compares each word in a text against predefined word categories, classified in dictionaries. It then calculates an intensity per dictionary: the proportion of total words that matches each dictionary. Since Pennebaker et al.'s quantitative operationalization, more than 120 studies have employed the software (Tausczik and Pennebaker 2010). We provide definitions, representative articles, and operationalizations of the narrative elements in table 1 and elaborate on each below.

Insert table 1 about here

Linguistically, landscapes of consciousness consist of three consecutive parts: motion (an initiating event), a mental state (affective or cognitive), and another motion (a subsequent event). Thus, to measure the landscapes of affective and cognitive consciousness' level of development,

we divided each review into sentences, used LIWC's "motion" (168 words; e.g., "arrive", "car", "go"), "affective processes" (i.e., affective consciousness; 915 words; e.g., "abandon", "cried", "happy"), and "insight" (i.e., cognitive consciousness; 195 words; e.g., "consider", "know", "think") dictionaries, and derived sentence-level intensities. We then counted the number of motion–affective process–motion (landscape of affective consciousness) and motion–insight–motion (landscape of cognitive consciousness) trigrams across three sequential sentences (one word per sentence) in each review. We divided this count by the total number of sentences and words in each review.

Space and its attributes indicate the existence of spatial embedding in texts. Thus, to operationalize spatial embedding, we used 288 validated space (e.g., "down", "in", "thin") and 272 validated perceptual process (i.e., attributes; e.g., "beautiful", "quiet", "reeking") words of the original LIWC dictionaries that four independent expert coders revalidated. We then read these adapted dictionaries into LIWC to derive review-level intensities for space and perceptual process words. We converted these intensities into an ordinal variable that signified the level at which a review was spatially embedded, coded as (0) neither space nor perceptual process unigrams (i.e., single words), (1) space unigrams but no perceptual process unigrams, or (2) space and perceptual process unigrams. As perceptual processes require space to be pinpointed but space does not require its attributes to be pinpointed, space unigrams can occur alone or with perceptual process unigrams, but perceptual process unigrams should always occur with space unigrams.

Chronology (narrative movement) and causality (narrative framing) indicate the existence of temporal embedding in texts. We followed a procedure like spatial embedding's to operationalize temporal embedding. (See web appendix B for more details on the development

and validation of the spatial and temporal embedding dictionaries.) Here, the final dictionaries counted 246 revalidated time (e.g., “end”, “season”, “until”) and 106 revalidated causation (e.g., “because”, “effect”, “hence”) words. We again used LIWC to derive review-level intensities for time and causation words. We converted the intensities into a categorical variable that signified the level at which a review was temporally embedded, coded as (0) neither time nor causation unigrams, (1) either time or causation unigrams, or (2) both time and causation unigrams.

To reveal the five genres, we mapped the emotional story shape of each review. We divided each review into sentences and used LIWC’s positive (406 words; e.g., “love”, “nice”, “sweet”) and negative (499 words; e.g., “hurt”, “nasty”, “ugly”) emotions dictionaries to derive sentence-level intensities for positive and negative emotions. We then calculated the sentence-level emotionality as the absolute difference between these intensities. Next, we computed a sentence ratio (*s*) by dividing each sentence number by the total number of sentences in the review. Since the change in emotionality across sentences shapes a story, we then estimated for each review a linear growth-rate model of emotionality across the sentence ratio, using the method of least squares (Jokisaari and Nurmi 2009). A nonsignificant coefficient for *s* ($p \geq .05$) described a rate of change near zero for the review’s emotional story shape. We classified these reviews as stable genres.

We then estimated nonlinear growth-rate models for each review with a significant coefficient for *s* ($p < .05$). A significant, positive coefficient for *s* without a significant coefficient for s^2 or with a significant, positive coefficient for s^2 described a continuous increase of a review’s emotional story shape. We classified these reviews as progressive genres. A significant, negative coefficient for *s* without a significant coefficient for s^2 or with a significant, negative

coefficient for s^2 described a continuous decrease of a review's emotional story shape. Thus, we classified these reviews as regressive genres.

A significant, negative coefficient for *s* with a significant, positive coefficient for s^2 described a negative curvilinear degree for a review's emotional story shape, potentially corresponding to a U shape (i.e., comedy). Conversely, a significant, positive coefficient for *s* with a significant, negative coefficient for s^2 described a positive curvilinear degree for a review's emotional story shape, which potentially indicated an inverted U shape (i.e., tragedy). To ascertain whether the emotional story shape truly reversed, we broke these reviews into two parts—(1) from the first sentence to the most extreme change in emotionality and (2) from there to the last sentence—and estimated separate growth-rate models for each part. A significant, negative (positive) coefficient before the breakpoint with a significant, positive (negative) coefficient after the breakpoint truly described a U shape (inverted U shape). Only if these conditions were met, did we classify reviews as comedies or tragedies. We added reviews with a positive (negative) coefficient before the breakpoint and a positive (negative) coefficient after the breakpoint to the progressive (regressive) genre class.

To avoid overestimating the impact of short reviews specifically, we only conducted these analyses on reviews that contained emotion words and were average (seven) or more sentences long. We assigned all other reviews a value of zero on genre after standardization (i.e., we assigned those reviews the mean value) and included a dummy variable in our regression analyses to control for those reviews (for this standard imputation procedure, see Berger and Milkman 2012). These analyses revealed the basic emotional story shapes that form the five genres: progressive (n = 478), regressive (n = 2,537), stable (n = 58,925), comedy (n = 891), and tragedy (n = 477). The *Mystery Adventures* reviews—one with which we open the article and

another which we cite in the genre hypothesis development section—exemplify the latter two genres (see figure 2).

Insert figure 2 about here

To operationalize drama, we conducted climax analyses (Ludwig et al. 2014), using sentence ratios as in the genre analyses. We located the emotionally most extreme sentence ratio per review by computing the deviation from the previous sentence ratio's emotional polarity for each sentence ratio. The earlier the climax, the more the review follows a curiosity order. We reverse coded the ratio so the greater the ratio, the greater the drama. For the sake of robustness, we only conducted these analyses on reviews with three sentences or more and with only a single climax, which moreover was more than one standard deviation removed from the average change in emotionality across all reviews in the corpus. The other reviews' missing values were substituted using Berger and Milkman's (2012) standard imputation procedure.

Narrative Persuasion Estimation. We included positive feedback as the narrative persuasion variable measured by consumers' thumbs-up gestures. We report the means and standard deviations of the positive feedback, narrative elements, and control variables in table 2 and their intercorrelations in table 3. To account for the number of zero thumbs-up gestures and skewed distribution of positive feedback (skewness = 10.29; Shapiro–Wilk's $W = .57$, $p < .001$), we conducted negative binomial and zero-inflated Poisson regression analyses (Greene 2011), in which the narrative elements predicted positive feedback, while controlling for contextual cues. We also included dummy variables to control for the 18 categories TripAdvisor uses to classify the multitude of "things to do" reviewed on its website. Additionally, we clustered the standard errors at the category level to control for potentially correlated reviews within the same category.

The negative binomial regression predicted 65.94% and the zero-inflated Poisson regression 64.65% reviews without thumbs-up gestures. Because the zero-inflated Poisson regression was the better predictor of the observed 65.25% reviews without thumbs-up gestures (Vuong's Z = 48.86, $p < .001$), we only report its effects in the "Results" section. Web appendix C describes in more detail the Vuong (1989) test and the zero-inflated Poisson regression.

Insert table 2 about here

Insert table 3 about here

Results

Models. We report the effects of the narrative elements in table 4. The first model consists of the control variables, which explain 10.23% of the variance in positive feedback (Wald's $\chi^2_{(23)} = 53910.35$, $p < .001$). In the second, third, and fourth model, we entered the elements for content (model 2: Wald's $\chi^2_{\text{Change }(27)} = 2604.43$, $p < .001$), genre (model 3: Wald's $\chi^2_{\text{Change }(32)} = 198.48$, $p < .001$), and drama (model 4: Wald's $\chi^2_{\text{Change }(34)} = 40.22$, $p < .001$). These explain additional significant proportions of variance in positive feedback (10.91%, 11.12%, and 11.13%, respectively). As it includes all control variables and narrative elements, we detail Model 4 below. To determine the effect sizes, we used the incidence rate ratio (IRR), or the factor by which positive feedback would be expected to change if a narrative element were to increase by one standard deviation, *ceteris paribus*.

Control Variables. The effects of review age (β = .38, $p < .001$, IRR = 1.46), extremity (β = .19, $p < .001$, IRR = 1.21), length (β = .06, $p < .001$, IRR = 1.06), and reviewer expertise (β = .17, $p < .001$, IRR = 1.19) on positive feedback are significant. The effects of review eloquence (β = .02, $p = .162$) and readability (β = –.01, $p = .076$) are not significant.

Narrative Content Elements. We find that landscape of affective consciousness (β = .01, $p < .001$, IRR = 1.01), landscape of cognitive consciousness (β = .03, $p < .001$, IRR = 1.03), spatial embedding (β = .05, $p < .01$, IRR = 1.05), and temporal embedding (β = .13, $p < .001$, IRR = 1.14) significantly increase positive feedback. Thus, hypotheses 1(b)–4(b) are supported.

Narrative Discourse Elements. We find that reviews coded as comedies (β = .02, $p < .05$, IRR = 1.02) or tragedies (β = .03, $p < .01$, IRR = 1.03) receive more positive feedback than reviews of other genres. Additionally, the earlier the climax, the more positive feedback is received (β = .02, $p < .05$, IRR = 1.02). Thus, we find support for hypotheses 5(b) and 6(b).

Insert table 4 about here

Robustness. First, we tested whether interactions between the elements for content, genre, and drama could further explain positive feedback. The elements did not interact significantly however (β = .02, $p = .720$).

Second, we conducted sensitivity analyses. While most comprehensive, our review length measure cannot easily capture reviews with many sentences but few words or vice versa. If many reviews are of these syntaxes however, our model may misestimate their impact. The sensitivity analyses showed though that model 4 explained variance identical to reduced models that control for either sentence count or word count (McFadden's pseudo-R^2s = .11; see web appendix D).

Predictive Performance. We conducted a logistic regression on the review corpus. With model 4's narrative elements and control variables, the logistic regression predicted whether a review received positive feedback. The logistic regression predicted the correct classification of 68.8% of the reviews, which is in line with previous text analyses (ranging from 60% to 70%, Das and Chen 2007).

Validity. Two independent expert coders used an adaptation of Escalas and Bettman's (2000) instrument to classify the text of a stratified random subsample of 90 seven-sentence reviews. After practicing on 10 example reviews, the coders classified the sampled reviews, and we compared their classification with the automated text analysis. Between the coders and the automated text analysis, generally moderate to substantial agreement levels were achieved ($.50 < \alpha < .80$, Krippendorff 2013). On average, the automated text analysis returned 3.5% false positive and 6.6% false negative decisions compared with the coders' classification.

Discussion

Study 1 mapped narrativity using automated text analysis. Across nearly 200,000 reviews, our computerized technique shows that narrativity markedly affects consumer persuasion. Specifically, the four narrative content elements (landscapes of affective and cognitive consciousness as well as spatial and temporal embedding) all had significant, positive effects on positive feedback. The two narrative discourse elements (genre and drama) also had significant effects on positive feedback. Comedies and tragedies as well as early climaxes, which indicate a curiosity-order drama, led to more positive feedback than other genres or dramatic

event orders. Thus, our results demonstrate that as the narrative-related textual elements that contribute to a review's narrativity increase, the persuasiveness of the review increases.

A substantial number of reviews received no positive feedback in study 1. These reviews score lower on most narrative elements (except for stable genre, tragedy, and drama: *t*s(190459) ≤ .1.27, *p*s ≥ .205; see table 2). Moreover, the sheer number of reviews for some categories could limit their exposure. Indeed, a logistic regression conducted *ex post* shows that if the number of reviews for any category were to increase by one standard deviation, the odds to receive a thumbs-up gesture would decrease by .536 ($p < .001$). An additional test shows that reviews without gestures compete with a significantly higher number of reviews per category ($M = 5354$, SD = 8420.02) than reviews with gestures ($M = 1892$, SD = 3367.08; $t(190459) = –101.55$, $p < .001$). Study 2 tests the extent of the narrativity difference between reviews with and without thumbs-up gestures without competitive interference.

We did not test the specific hypotheses for narrative transportation in study 1. From a purely methodological perspective, the inclusion of this variable in study 1 was impossible, as it is not available in online corpora of reviews, which precludes measurement. As previously mentioned, we explained the relevance of narrativity with narrative transportation however. We also address this concern in study 2.

STUDY 2

In study 2, research participants evaluated a systematic subsample of study 1's reviews to address hypotheses 1(a/b)–6(a/b).

Method

Participants. Amazon Mechanical Turk (MTurk) workers (N = 304; 46.1% female) rated reviews systematically drawn from study 1's data set; confidentiality was assured. Participants were primarily native English speakers (99.0%). Their age ranged from 18 to 77 years, with an average of 33.15 years (SD = 10.10). Most had received a high school diploma (39.5%), 23.0% had earned an associate or vocational degree, and 29.6% and 7.2% had graduated from university with a bachelor or master's degree, respectively.

Materials and Procedure. After the introduction to the study, the participants saw 10 reviews randomly drawn from the subset of 90 seven-sentence reviews sampled for validation coding in study 1. Half the sampled reviews were without thumbs-up gestures on TripAdvisor, which allowed us to test the prevalence of the effect of narrativity. Ten is the number of reviews most consumers feel they need to read before they can make an informed decision (Eliot and Anderson 2015). After reading each review, participants responded to narrative transportation and persuasion measures. After the study, participants answered demographic measures and then were thanked and dismissed.

Measures. Narrative persuasion was measured as positive feedback. We assessed positive feedback with a more nuanced measure than TripAdvisor's binary choice: "To what extent was this review helpful?" The 7-point Likert-type scale ranged from "not at all" (6.6%) to "very much" (15.3%). The measure of narrative transportation was based on Green and Brock's (2000). We averaged 13 items, such as "While I was reading the review, I could easily picture the events in it taking place" and "After finishing the review, I found it easy to put it out of my

mind" (reverse coded; Cronbach's α = .79). The 7-point Likert scales ranged from "strongly disagree" to "strongly agree."

We used study 1's narrative elements scores in our analyses to ensure that participants' narrative transportation was a separate construct from the narrativity measure. We also used review eloquence, readability, and reviewer expertise as control variables. Table 5 lists the means, standard deviations, and intercorrelations of the key variables.

Insert table 5 about here

Results

Narrative Transportation–Positive Feedback Relationship. We conducted a mixed-effects regression analysis predicting positive feedback from narrative transportation, introducing control variables and random effects to eliminate any effect of review context and consumer characteristics, respectively. We find that narrative transportation predicts positive feedback (β = .96, $p < .001$).

Narrative Elements. We conducted mixed-effects regression analyses predicting narrative transportation and positive feedback from the narrative elements, again adding control variables and random effects. The Pearson correlation squared provided our effect size indicator. We find that an increase in all hypothesized narrative elements significantly increases both narrative transportation (NT) and positive feedback (PF): landscape of affective consciousness (NT: β = .02, $p < .001$, $R^2 = .001$; PF: β = .09, $p < .001$, $R^2 = .004$), landscape of cognitive consciousness (NT: β = .03, $p < .001$, $R^2 = .002$; PF: β = .03, $p < .001$, $R^2 = .001$), spatial embedding (NT: β =

.08, $p < .001$, $R^2 = .018$; PF: β = .23, $p < .001$, $R^2 = .028$), temporal embedding (NT: β = .07, $p < .001$, $R^2 = .008$; PF: β = .17, $p < .001$, $R^2 = .011$), comedies (NT: β = .13, $p < .001$, $R^2 = .039$; PF: β = .51, $p < .001$, $R^2 = .061$), tragedies (NT: β = .22, $p < .001$, $R^2 = .049$; PF: β = .85, $p < .001$, $R^2 = .067$), and early climax (drama; NT: β = .24, $p < .001$, $R^2 = .269$; PF: β = .53, $p < .001$, $R^2 = .269$). In sum, we find (further) support for hypotheses 1(a/b)–6(a/b).

Mediation Analyses. We bootstrapped the indirect effects for the previously reported direct effects of the narrative elements on positive feedback per Hayes's (2013b) approach. The estimates presented here and in table 5 are based on 1,000 bootstrap samples. Narrative transportation mediates the hypothesized relationships between each of the narrative elements and positive feedback (point estimates ≥ .03; 95% CI limits = .01, .52). As an indication of effect size, the proportion of the total effect of the narrative elements on positive feedback that narrative transportation mediates ranged from 35.2% to 100%.

Discussion

In study 2, we empirically measured narrative transportation, which predicted positive feedback and thus helps explain the persuasive effect of narrativity. Specifically, narrative transportation significantly mediated the persuasive effect of narrativity on positive feedback. Study 2 also demonstrates that more narrative reviews are more transporting and positively evaluated than less narrative reviews, across the narrative elements and regardless of thumbs-up gestures on TripAdvisor. Here, MTurk workers reported narrative transportation and positive feedback for a stratified random subsample of reviews. They perceived few not-at-all-helpful reviews (6.6%). Because positive feedback for the sampled reviews differed for all narrative

elements, another variable, such as review volume, must also be inhibiting thumbs-up gestures on TripAdvisor for the reviews without gestures in study 1.

Neither study 1 nor study 2 addressed the distinction between surprise- and curiosity-order dramas in a strict manner. Sentence ratio does not strictly distinguish between a curiosity and surprise order of events. We designed study 3 specifically for this purpose, completing study 1's climax analyses. In Study 3, we also address the question of how narrativity's impact on narrative transportation into reviews influences persuasive outcomes that are important to consumer behavior other than positive feedback. Keeping story valence and all other things equal bar narrative transportation, we manipulate this mechanism to establish its exclusive relationship to attitude toward and intention to purchase the reviewed product or service, in addition to positive feedback.

STUDY 3

Study 3 was an online experiment with a randomized 2 (instruction: narrative or age-10 reading) × 2 (drama: curiosity or surprise order) full-factorial design to clarify and extend the findings of studies 1 and 2.

Method

Participants. Ninety-one undergraduates and 65 graduate students (67.3% female) at Cass Business School, City University of London, participated in the study to fulfill a partial course requirement. Confidentiality was assured. The age of the participants ranged from 18 to 29 years, with an average of 21.29 years (SD = 1.93).

Materials and Procedure. Participants were introduced to the experiment with the preamble to Adaval and Wyer's (1998) travel brochures study, adapted to the digital age: "The South Asian Association for Regional Cooperation [an existing organization] … wishes to determine what people think about the information that is shared digitally about things to do in Southeast Asia." Several reviews had ostensibly been given to the Cass marketing faculty for testing. Participants were told that they would be reading one of these reviews.

Following the introduction, participants received one of two of Green and Brock's (2000) written instruction sets, referred to as narrative and age-10 reading instructions. Narrative reading instructions, which tell participants simply to pay attention, served as the baseline narrative transportation condition. Age-10 reading instructions were intended to undermine narrative transportation; they asked participants to focus on identifying words that a person reading at the age-10 level would not understand. This task does not distract from the text of a story, but it does reduce narrative transportation (Green and Brock 2000; van Laer, de Ruyter, and Cox 2013).

Afterward, participants read a review based on Adaval and Wyer's (1998) travel brochure story with the drama following a curiosity or a surprise order (see web appendix E). The story describes predominantly desirable features of a trip to Agra, India; however, for face validity, one relatively undesirable aspect of the trip is described as well. In the curiosity order, the story first flashes forward, revealing the climax: "I did not get any sleep in Agra, home of the Taj Mahal." From that moment, the story flashes back, and the events are described in chronological order ("My holidays started out fine. After I visited the capital of India, Delhi, I moved on to see the Taj Mahal in Agra…."), finishing with the revelation of the cause for the lack of sleep: "It turns out that Agra accommodations are not luxurious and I spent my nights awake on a straw

mat." In the surprise order, before the revelation of the cause of the event, the climax occurs: "Up until that moment, my holidays had been fine, but I did not get any sleep in Agra, home of the Taj Mahal." The event necessary to determine the causal chain is only mentioned in the next sentence. The curiosity- (surprise-) order review counted nine (eight) sentences and 126 (131) words. After reading the review, participants responded to dependent measures in random order, attention and manipulation checks, and demographic measures. They were then thanked and dismissed.

Dependent Measures. Narrative persuasion was measured as positive feedback, attitude toward the reviewed travel experience, and purchase intention. To measure positive feedback, we averaged how helpful, useful, and informative participants found the review (Cronbach's α = .82). The three-item 7-point Likert-type scale by Moore (2015) ranged from "not at all" to "very much." To measure attitude toward the reviewed travel experience, we averaged four 7-point semantic differential–type scales, which ranged from "bad" to "good," "worthless" to "valuable," "unpleasant" to "pleasant," and "dirty" to "clean" (α = .71). To measure purchase intention, we averaged participants' estimated chance of (Juster 1966), likelihood of and intention to travel to Agra in the future (Moore 2015), as well as the extent to which they desired to go to Agra in the future (Adaval and Wyer 1998) (α = .89). Participants reported the four estimates on an 11-point Likert-type scale. Juster's item ranged from "no chance, almost no chance [1 in 100]" to "certain, practically certain [99 in 100]." The other three items ranged from "not at all" to "very much." The narrative transportation measure (α = .80) was the same as in study 2. Table 6 lists the means, standard deviations, and intercorrelations of the narrative transportation and persuasion variables across instruction and drama conditions.

Attention and Manipulation Checks. To check whether participants had read the entire review carefully, they completed four open-ended questions, designed to test recall of information from the review. The questions included requests for the name of the capital of India and the location of the Taj Mahal.

We used Green and Brock's (2000) two instruction manipulation checks: "I read the review carefully, just like I would read a story or article for fun" and "While reading the review, I was looking for words and sentences that might not be understood by a 10-year-old reader." These two 7-point Likert items ranged from "strongly disagree" to "strongly agree." We checked the drama manipulation using Bargh and Chartrand's (2000) procedure in which participants answer open-ended questions, starting with general questions ("When you were reading the review, did you notice anything unusual about the text?" and "What did you notice?") and ending with more specific questions ("Did you notice any particular pattern to the sentences that were included in the review?" and "What particular pattern did you notice?").

Insert table 6 about here

Results

Attention and Manipulation Checks. We dropped two participants who gave wrong answers to all four questions on the recall measure from all analyses because they likely read the review partially or carelessly. A 2 × 2 MANOVA with instruction and drama as between-subject factors revealed significant differences in the expected direction for the instruction manipulation checks ($F(2, 149) = 71.99$, $p < .001$). Narrative condition participants ($M = 5.51$, SD = 1.62) read

the review just like they would a story or article for fun significantly more than age-10 condition participants (M = 4.69, SD = 1.87; $F(1, 150) = 8.31$, $p < .01$). In turn, age-10 condition participants (M = 6.09, SD = 1.62) looked for words and sentences that might not be understood by a 10-year-old reader significantly more than narrative condition participants (M = 2.79, SD = 1.93; $F(1, 150) = 132.10$, $p < .001$). Neither drama nor its interaction with instruction had a significant effect (Fs(2, 149) ≤ 1.43, ps ≥ .243). In summary, our instruction manipulation was successful. Additionally, no participant indicated awareness of the review's drama manipulation.

Multivariate and Univariate Level Effects. We analyzed narrative transportation (NT), positive feedback (PF), attitude toward the reviewed travel experience (Att), and purchase intention (PI) with a 2 × 2 MANOVA with instruction and drama as between-subject factors. The eta squared provided our effect size indicator.

The results revealed a main effect of instruction at both the multivariate level ($F(4, 147) = 10.38$, $p < .001$) and most univariate levels (NT: $F(1, 150) = 12.67$, $p < .001$, $\eta^2 = .058$; PF: $F(1, 150) = 22.20$, $p < .001$, $\eta^2 = .103$; Att: $F(1, 150) = .05$, $p = .821$; PI: $F(1, 150) = 9.27$, $p < .01$, $\eta^2 = .048$). The results also revealed a main effect of drama at both the multivariate ($F(4, 147) = 22.01$, $p < .001$) and univariate levels (NT: $F(1, 150) = 40.94$, $p < .001$, $\eta^2 = .187$; PF: $F(1, 150) = 24.65$, $p < .001$, $\eta^2 = .114$; Att: $F(1, 150) = 41.60$, $p < .001$, $\eta^2 = .205$; PI: $F(1, 150) = 27.74$, $p < .001$, $\eta^2 = .143$). Interactions between instruction and drama at both the multivariate ($F(4, 147) = 6.68$, $p < .001$) and univariate levels (NT: $F(1, 150) = 11.66$, $p < .01$, $\eta^2 = .053$; PF: $F(1, 150) = 13.99$, $p < .001$, $\eta^2 = .065$; Att: $F(1, 150) = 9.82$, $p < .01$, $\eta^2 = .048$; PI: $F(1, 150) = 4.63$, $p < .05$, $\eta^2 = .024$) qualified these findings.

Simple Contrasts. The narrative-reading participants who read the curiosity-order drama reported higher levels of narrative transportation (M = 4.94, SD = .38; ts ≥ 6.88, ps ≤ .001),

positive feedback (M = 5.16, SD = .98; ts ≥ 6.34, ps ≤ .001), attitude toward the reviewed travel experience (M = 5.16, SD = .52; ts ≥ 3.36, ps ≤ .01), and purchase intention (M = 6.98, SD = 2.13; ts ≥ 3.91, ps ≤ .001) than the narrative reading/surprise (NT: M = 4.07, SD = .71; PF: M = 3.56, SD = 1.28; Att: M = 3.86, SD = 1.10; PI: M = 4.28, SD = 2.51), age-10 reading/curiosity (NT: M = 4.32, SD = .43; PF: M = 3.61, SD = 1.03; Att: M = 4.70, SD = .69; PI: M = 5.09, SD = 2.21), and age-10 reading/surprise participants (NT: M = 4.06, SD = .63; PF: M = 3.38, SD = 1.27; Att: M = 4.26, SD = .96; PI: M = 3.95, SD = 2.15). These findings provide further support for hypotheses 6a and 6b (see table 6).

Mediation Analyses. We bootstrapped the indirect effects of the instruction × drama interaction on positive feedback, attitude toward the reviewed travel experience, and purchase intention, using Hayes's (2013a) models 8 and 6, respectively. The estimates presented here are based on 1,000 bootstrap samples. The Pearson correlation squared provided our effect size indicator. In model 8, narrative transportation predicts the other dependent measures (PF: β = .39, t = 2.43, p < .05, R^2 = .242; Att: β = .41, t = 3.33, p < .01, R^2 = .121; PI: β = .67, t = 2.12, p < .05, R^2 = .170) beyond the instruction × drama interaction. In model 6, three series are significant (R^2 = .322): (a) narrative transportation and attitude toward the reviewed travel experience in serial mediate the relationship between the interaction and purchase intention (point estimate = .07; 95% CI limits = .02, .15); (b) positive feedback and attitude toward the reviewed travel experience in serial also mediate the relationship between the interaction and purchase intention (point estimate = .13; 95% CI limits = .06, .26); and (c) narrative transportation, positive feedback, and attitude toward the reviewed travel experience mediate the relationship between the interaction and purchase intention (point estimate = .03; 95% CI limits = .01, .08).

Discussion

In study 3, we addressed the distinction between surprise- and curiosity-order dramas by manipulating them in a strict manner, to corroborate and extend study 1's climax analyses. Study 3 also tested the effect of reviews on attitudes and purchase intentions. Our multivariate, univariate, and mediation analyses indicate that, when narrative reading is not inhibited, curiosity-order drama transports and persuades consumers more than surprise-order drama, as this comment of a narrative-reading/curiosity participant demonstrates: "It was like a story. The reviewer didn't just post the review for accommodations in Agra, they described their journey from Delhi to Agra, giving some insights to their trip."

GENERAL DISCUSSION

Together, our three studies provide several insights into the narrativity of consumer reviews, narrative transportation, and subsequent persuasion. Specifically, our findings explain how narrative-related, textual elements affect narrative transportation, lead to positive feedback, and predict consumer attitudes and purchase intentions. Overall, the significant narrative elements fall into two categories: content and discourse.

In the narrative content category, we highlight characters' landscapes of affective and cognitive consciousness and events' spatial and temporal embedding that, consistent with hypotheses 1–4, transport and persuade consumers. We note that the effect size of temporal embedding in study 1 is surprisingly large. The IRR shows that if a review's temporal embedding were to increase by one level, positive feedback would increase by 14%. This effect

size underscores the importance of chronology and causality (Escalas 1998). We propose that a story must include chronology or causality, the creation of which constitutes the opening act of storytelling. This simple definitional criterion would not impede storytellers from producing other narrative elements however. While temporal embedding and other elements coincide within the same story, temporal embedding is conceived first.

In the narrative discourse category, we highlight comedies and tragedies, which, consistent with hypothesis 5, transport and persuade consumers more than progressive, regressive, or stable genres. In this category, we also highlight curiosity-order drama, which, consistent with hypothesis 6, transports and persuades consumers more than surprise-order drama. These findings show that review emotionality, which prior research considers a text-level phenomenon and a property of a review as a whole (Yin, Bond, and Zhang 2014), is a sentence-level phenomenon and the property of the sentences that make up a review's emotional story shape.

Contributions

We construct a new theory of narrativity to answer the questions of which narrative elements account for the experience of narrative transportation into, and persuasion by, consumer reviews. Our contributions to past work beyond this theory are threefold, consistent with the objectives of our interdisciplinary, multimethod research. First, while the part of narrativity theory about what constitutes a persuasive narrative had been tested empirically (van Laer et al. 2014), how such a narrative looks had not been determined with rigor. We show that consumer reviews that not only develop the definitional features of stories well (i.e., narrative content, such

as characters and events), but are also shaped to evoke a more emotionally changing genre and a more dramatic event order, are more transporting and persuasive than those that are less shaped as such. In this first empirical exploration of these two narrative discourse elements, we have also further clarified their links within the conceptual framework of narrativity.

Second, we have operationalized the conceptual framework of narrativity with computational linguistics. We have revalidated LIWC dictionaries and, from the ground up, developed a computerized technique to assess narrativity that is suitable for large digital corpora of textual data. As a result, we could demonstrate how to justifiably detect four narrative content elements and two narrative discourse elements in potentially storied texts. Using a big data set of online consumer reviews, we validly and reliably measure narrativity to determine its impact on consumers.

Third, our data specifically contained nearly 200,000 verbatim, online consumer reviews. Therefore, we could test the simultaneous effects of a comprehensive set of narrative elements on narrative transportation and persuasion. While the current context does not show interactions, to our knowledge this is the first effort to incorporate the intercorrelations between these narrative elements in a single investigation. Additionally, our research explores an extensive range of review texts, ranging from minimal stories to brighter manifestations of the same narrative light and thus goes beyond most laboratory studies. Our analysis of this extensive range demonstrates that narrativity should be thought of as a continuum, a dimmer switch as it were, rather than an on/off switch of story versus not, as operationalized by prior consumer research.

Limitations and Directions for Further Research

As with any research, our studies suffer from certain limitations. First, although our aim was to advance understanding of the impact of reviews' narrativity on consumers, we specifically analyzed online consumer reviews of leisure travel–related experiences in English. Several scholars (Scott and Orlikowski 2012; van Laer, Visconti, and Feiereisen forthcoming) conceptualize travel as consumption, and English is the Internet's dominant natural language; thus, we build on substantial contributions to the field. However, the consumer reviews we research address only the world's most purchased leisure travel–related experiences. This scale is sufficient to provide meaningful insight into the impact of narrativity on consumers, but the scope is not. Although people's motivations for and narrative interpretations of consumption are often surprisingly similar (Celsi, Rose, and Leigh 1993), we call for attempts to replicate our results for material reviews, other consumption contexts (e.g., innovative products, Schweitzer and van den Hende 2017), and different languages (e.g., Mandarin Chinese, Jiang and van Laer 2016).

Van Boven and Gilovich (2003, 1194) define experiential purchases as "those made with the primary intention of acquiring a life experience: an event or series of events that one lives through", such as visiting a restaurant, attending a performance, or playing a game. In line with this definition, experiential consumption always implies the essential elements for stories. Conversely, technical descriptions of a product may characterize consumer reviews of material purchases. Numerous research questions can be raised: How do stories recounting life experiences differ from stories recounting experiences with material goods? Would analyzing consumer reviews of temporally accessed products, such as shared cars (Bardhi and Eckhardt 2012), be different from analyzing consumer reviews of tangible objects that are kept in the reviewer's possession, such as digital cameras (Schlosser 2003)? Could narrative elements

interact in the latter context, in that comedies and tragedies are only persuasive for temporally embedded stories of digital cameras? What is the effect of narrativity for services?

Second, our computerized technique operates at the sentence level. A sentence is the smallest set of words that is a complete unit of expression (e.g., of an event, a feeling, a thought, or an action) and that, in writing, must begin with a capital letter and conclude with a full stop, question mark, or exclamation mark. However, this important syntactic unit does not allow the inclusion of *n*-grams that exist within a sentence. While sentence-level automated text analysis can explain narrative transportation and persuasion using six narrative elements, the case can always be made that other factors account for variance.

Third, our follow-up studies highlight the need for research that goes beyond the limitations of computational linguistics. Drama is a case in point. Burke (1962) asserts that any complete story should answer five questions that correspond to the five points of his "dramatistic pentad": What was done? (act), Who did it? (agent), How did he or she do it? (agency), Where and when was it done? (scene), and Why? (purpose). In his view, drama emerges if the pentad is breached—for example, if acts are not on purpose or agents and agency do not match. Perhaps drama can therefore exist without emotions. While rigorous, this article's automated text analysis could not test this possibility. Our computerized technique marks a starting point from which to initiate further research therefore.

CONCLUSION

Paraphrasing T. S. Eliot (1942), at the end of our exploration, we arrive where we started. We observed that what happens in Las Vegas stays neither in Vegas nor on TripAdvisor. Instead,

some reviews affect consumers within and beyond these meadows. A new theory of narrativity and computerized technique helped us understand: beneath narrative transportation and persuasion lie powerful narrative content and discourse.

DATA COLLECTION

The second and third author supervised the collection of data for study 1 by lab managers at Vanderbilt University's eLab. The first, second, and fourth author jointly managed the collection of data for study 2 using the Amazon MTurk panel and for study 3 using the Cass Business School student Qualtrics panel. The first and third author jointly analyzed the data.

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TABLE 1

NARRATIVE ELEMENTS: DEFINITIONS, REPRESENTATIVE ARTICLES, AND OPERATIONALIZATIONS

Element		Definition	Representative articles	Operationalization
Narrative content				
Landscape of affective consciousness		The extent to which a text recounts initial events about which characters express feelings that, in turn, lead to subsequent events.	Bruner (1986); Feldman et al. (2014)	number of motion–affective process–motion trigrams in the text divided by the total number of sentences and words in the text
Landscape of cognitive consciousness		The extent to which a text recounts initial events about which characters express thoughts that, in turn, lead to subsequent events.	Bruner (1986); Feldman et al. (2014)	number of motion–insight–motion trigrams in the text divided by the total number of sentences and words in the text
Spatial embedding		The extent to which a text focuses on particular spaces and names its attributes.	Brewer and Lichtenstein (1981); Escalas and Bettman (2000)	presence of space unigrams (1) / space and perceptual process unigrams (2) in the text
Temporal embedding		The extent to which a text has a chronological flow and provides causal links between the events that occur.	Escalas (1998); Thompson (1997)	presence of time or causation unigrams (1) / time and causation unigrams (2) in the text
Narrative discourse				
Genre			Deighton et al. (1989); Genette (1979/1992); Gergen and Gergen (1988); Vonnegut (2005)	
	Progressive	Emotion ameliorates over the course of a text.		continuous increase of emotional story shape across the text
	Regressive	Emotion deteriorates over the course of a text.		continuous decrease of emotional story shape across the text
	Stable	Emotion is stable over the course of a text.		rate of change near zero for emotional story shape across the text
	Comedy	Emotion first deteriorates and then ameliorates over the course of a text.		negative curvilinear degree (U) of emotional story shape across the text
	Tragedy	Emotion first ameliorates and then deteriorates over the course of a text.		positive curvilinear degree (inverted U) of emotional story shape across the text
Drama		The extent to which a text is organized in a curiosity-order of events.	Brewer and Lichtenstein (1982); Burke (1962); Steiner (1984)	location of emotional climax in the text

TABLE 2

STUDY 1: MEANS AND STANDARD DEVIATIONS OF POSITIVE FEEDBACK, NARRATIVE ELEMENTS, AND CONTROL VARIABLES

		Complete corpus *M* (SD)	Without thumbs-up gestures *M* (SD)	With thumbs-up gestures *M* (SD)	*t*-test of difference
1	Positive feedback	.77 (2.01)	.00 (.00)	2.22 (2.91)	
2	Landscape of affective consciousness	.00 (.00)	.00 (.00)	.00 (.00)	4.80***
3	Landscape of cognitive consciousness	.00 (.00)	.00 (.00)	.00 (.00)	8.79***
4	Spatial embedding	1.79 (.43)	1.77 (.44)	1.84 (.38)	35.49***
5	Temporal embedding	1.30 (.64)	1.23 (.65)	1.44 (.61)	71.32***
6	Progressive genre	.01 (.09)	.01 (.08)	.01 (.10)	4.81***
7	Regressive genre	.04 (.20)	.04 (.20)	.04 (.19)	2.85**
8	Stable genre	.93 (.25)	.93 (.25)	.93 (.26)	1.09
9	Comedy	.01 (.12)	.01 (.11)	.02 (.12)	2.63**
10	Tragedy	.01 (.09)	.01 (.08)	.01 (.09)	1.27
11	Drama[a]	.48 (.24)	.52 (.24)	.52 (.26)	.97
12	Review age[a]	740 (568.80)	657 (390.96)	894 (779.36)	88.29***
13	Review eloquence	.14 (.06)	.14 (.06)	.14 (.05)	7.78***
14	Review extremity[a]	.66 (.65)	.58 (.52)	.82 (.82)	78.87***
15	Sentence count[a]	7 (4.56)	6 (3.48)	8 (5.86)	95.84***
16	Word count[a]	90 (90.83)	72 (65.30)	122 (118.76)	120.00***
17	Review readability[a]	.23 (.77)	.25 (.84)	.20 (.62)	12.58***
	Reviewer expertise[a]	27 (82.70)	22 (54.93)	34 (118.00)	29.50***

[a] Nonnormally distributed variable; log-transformed unless otherwise stated.

Complete corpus: N = 190,461; without thumbs-up gestures: n = 124,274; with thumbs-up gestures: n = 66,187; * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 3

STUDY 1: INTERCORRELATIONS OF POSITIVE FEEDBACK, NARRATIVE ELEMENTS, AND CONTROL VARIABLES

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Positive feedback																	
2	Landscape of affective consciousness	.03																
3	Landscape of cognitive consciousness	.06	.13															
4	Spatial embedding	.06	.00	.02														
5	Temporal embedding	.14	.01	.06	.16													
6	Progressive genre	.02	.00	.01	.00	.02												
7	Regressive genre	-.02	.01	.01	-.01	.00	-.02											
8	Stable genre	-.01	.00	-.01	.00	-.02	-.32	-.75										
9	Comedy	.03	-.01	.00	.01	.03	-.01	-.02	-.44									
10	Tragedy	.02	.00	.00	.01	.01	-.01	-.02	-.32	-.01								
11	Drama	.02	.01	-.01	-.01	-.02	.12	.01	-.06	-.06	.06							
12	Review age	.38	.01	.02	.03	.05	.01	.00	-.01	.02	.01	-.01						
13	Review eloquence	-.01	-.01	-.01	-.05	-.07	.00	-.01	.01	-.01	.00	-.02	-.02					
14	Review extremity	.21	.00	.00	-.01	.08	.09	-.04	-.01	.00	.03	-.11	.13	-.05				
15	Sentence count	.23	.00	.02	.16	.35	.01	-.02	-.02	.07	.01	.04	.10	-.03	.10			
16	Word count	.29	.00	.04	.19	.43	.02	-.01	-.03	.07	.01	.02	.13	-.04	.15	.80		
17	Review readability	-.03	.01	.00	-.03	-.06	.00	-.01	.01	-.01	.00	.00	-.02	.01	-.05	-.03	-.05	
	Reviewer expertise	.11	.00	.01	.02	.03	.00	.00	.00	.01	.00	.01	.07	.00	.01	.00	.03	.05

TABLE 4

STUDY 1: EFFECTS OF NARRATIVE ELEMENTS AND CONTROL VARIABLES ON POSITIVE FEEDBACK

	Model 1		Model 2		Model 3		Model 4		
	β	(SE)	β	(SE)	β	(SE)	β	(SE)	IRR
Narrative content									
Landscape of affective consciousness			.01	(.01)***	.01	(.00)***	.01	(.00)***	1.01
Landscape of cognitive consciousness			.03	(.01)***	.03	(.01)***	.03	(.01)***	1.03
Spatial embedding			.06	(.01)***	.05	(.02)**	.05	(.02)**	1.05
Temporal embedding			.15	(.01)***	.13	(.01)***	.13	(.01)***	1.14
Narrative discourse									
Genre[a]									
Progressive					.01	(.01)	.00	(.01)	1.00
Regressive					-.03	(.01)***	-.03	(.01)***	.97
Comedy					.02	(.01)*	.02	(.01)*	1.02
Tragedy					.03	(.01)**	.03	(.01)**	1.03
Drama							.02	(.01)*	1.02
Control variables[b]									
Review age	.40	(.04)***	.39	(.04)***	.38	(.04)***	.38	(.04)***	1.46
Review eloquence	.02	(.01)	.02	(.01)	.02	(.01)	.02	(.01)	1.02
Review extremity	.20	(.03)***	.19	(.03)***	.19	(.03)***	.19	(.03)***	1.21
Review length	.08	(.00)***	.07	(.02)***	.06	(.00)***	.06	(.00)***	1.06
Review readability	-.01	(.01)	-.01	(.01)	-.01	(.01)	-.01	(.01)	.99
Reviewer expertise	.17	(.02)***	.17	(.02)***	.17	(.02)***	.17	(.02)***	1.19
Wald's $\chi^2_{\text{Change (df)}}$			2604.43 (27)***		198.48 (32)***		40.22 (34)***		
McFadden's pseudo-R^2		.102		.109		.111		.111	

[a] Stable genre is the reference level; [b] Dummy variables for the 18 TripAdvisor categories are not reported in the table for the sake of brevity.
All models: N = 190,461; Model 1: Wald's $\chi^2_{(23)}$ = 53910.35; * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 5

STUDY 2: MEANS, STANDARD DEVIATIONS, INTERCORRELATIONS, AND INDIRECT EFFECTS OF POSITIVE FEEDBACK, NARRATIVE TRANSPORTATION, NARRATIVE ELEMENTS, AND CONTROL VARIABLES

	M	(SD)	1	2	Point estimate	95% CI limits	Proportion of total effect mediated
1 Narrative transportation	3.84	(.94)					
2 Positive feedback	4.76	(1.71)	.56				
Narrative content							
Landscape of affective consciousness	.00	(.01)	.05	.06	.03	.01, .07	.36
Landscape of cognitive consciousness	.00	(.01)	.02	.02	.04	.01, .07	1.00
Spatial embedding	1.75	(.46)	.09	.15	.11	.08, .15	.47
Temporal embedding	1.40	(.60)	.07	.09	.09	.05, .13	.52
Narrative discourse							
Genre[a]							
Progressive	.04	(.19)	.06	.02			
Regressive	.05	(.22)	-.01	.00			
Comedy	.07	(.25)	.02	.08	.18	.01, .35	.35
Tragedy	.04	(.19)	.03	.08	.30	.15, .45	.36
Drama	.60	(.27)	.01	.04	.31	.10, .52	.59
Control variables							
Review eloquence	.14	(.05)	.04	.03			
Review readability	.21	(.66)	-.04	-.03			
Reviewer expertise	19	(25.98)	.02	.00			

[a] Stable genre is the reference level.

Statistically significant mediation at $p < .05$: 95% CI > .00.

TABLE 6

STUDY 3: MEANS, STANDARD DEVIATIONS, AND INTERCORRELATIONS OF THE DEPENDENT VARIABLES AS A FUNCTION OF NARRATIVE AND AGE-10 READING INSTRUCTION AND CURIOSITY- AND SURPRISE-ORDER DRAMA

				Narrative				Age-10				
				Curiosity		Surprise		Curiosity		Surprise		
		N = 154		*n* = 43		*n* = 37		*n* = 38		*n* = 36		
		M	(SD)	*M*	(SD)	*M*	(SD)	*M*	(SD)	*M*	(SD)	1	2	3
1	Narrative transportation	4.38	(.66)	4.94	(.38)	4.07	(.71)	4.32	(.43)	4.06	(.63)			
2	Positive feedback	3.98	(1.35)	5.16	(.98)	3.56	(1.28)	3.61	(1.03)	3.38	(1.27)	.35		
3	Travel experience attitude	4.52	(.96)	5.16	(.52)	3.86	(1.10)	4.70	(.69)	4.26	(.96)	.34	.49	
	Purchase intention	5.16	(2.54)	6.98	(2.13)	4.28	(2.51)	5.09	(2.21)	3.95	(2.15)	.31	.42	.48

FIGURE 1

CONCEPTUAL FRAMEWORK OF NARRATIVITY

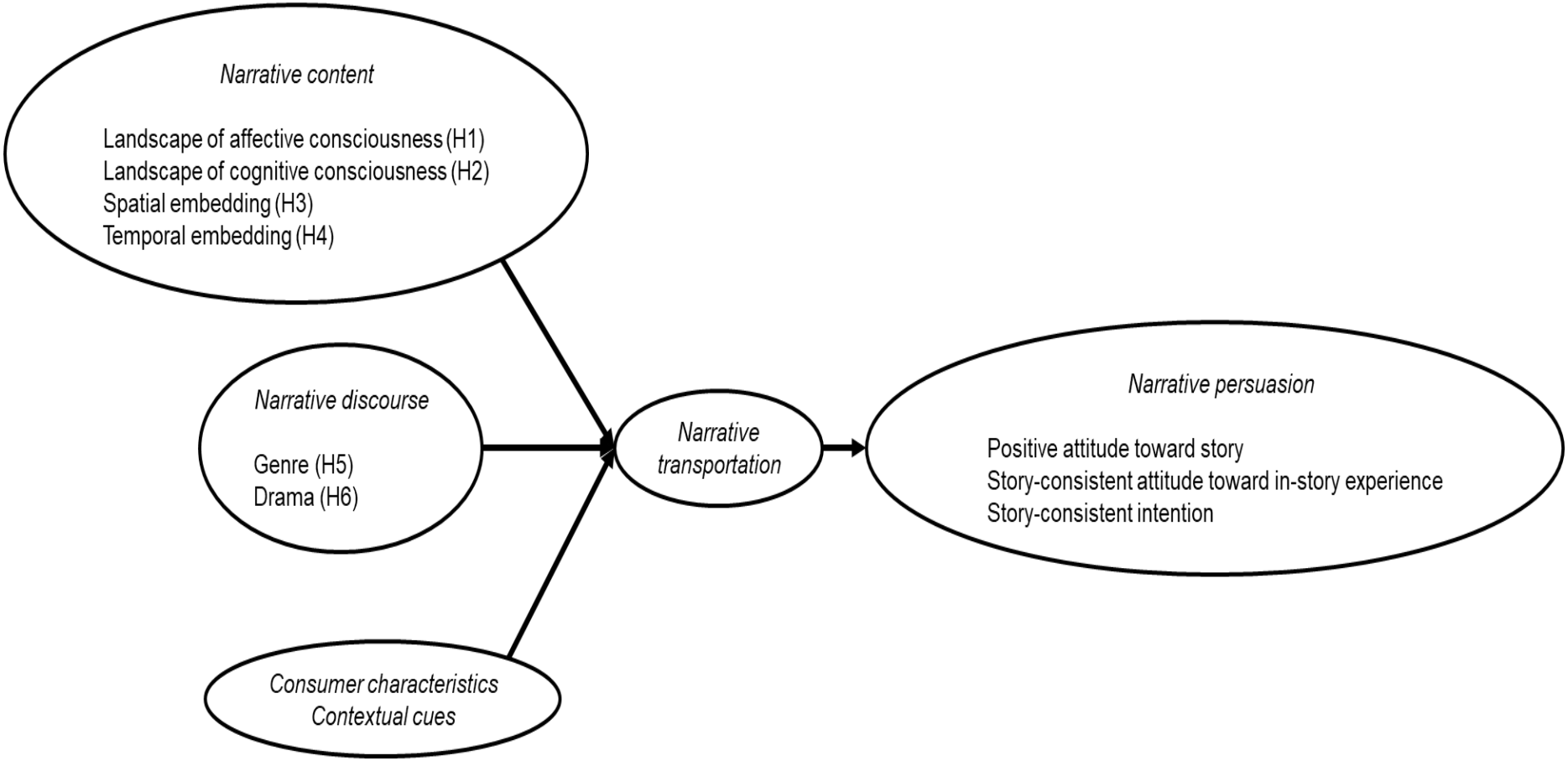

FIGURE 2

COMEDY AND TRAGEDY: EXAMPLE STORY SHAPES