The Dimensions of Story World Absorption and their Relationships to one Another

Abstract:

Absorption has proven to be an important mediator of reading enjoyment and persuasive text effects (Green & Brock, 2000; Kuijpers, Hakemulder, Tan & Doicaru, 2014). Typically, absorbing experiences with narrative media are captured using self-report measuring instruments. One such instrument is the Story World Absorption Scale, which is comprised of four dimensions: Attention, Emotional Engagement, Mental Imagery, and Transportation (Kuijpers et al., 2014). As of yet, we do not know how these dimensions relate to one another. Data from five different studies (two surveys and three experiments) using the Story World Absorption Scale were investigated with the use of structural equation modeling to answer this question. The results show that attention fulfills a crucial role in absorption and inform us about the possible progression of absorption experiences.

Keywords: Absorption; attention; reading experience; meta-analysis: structural equation modeling; story world absorption scale

Introduction

Absorption during reading – the enjoyable experience of feeling lost in a book - has, over recent decades been conceptualized and operationalized as a multi-dimensional phenomenon (Green & Brock, 2000; Busselle & Bilandzic, 2009; Kuijpers, Hakemulder, Doicaru & Tan, 2014). Typically, these experiences are measured using self-report measuring instruments. All of these instruments vary in some degree, as to the narrative medium they work with or the particular approach they take to narrative comprehension. For example, Busselle and Bilandzic's Narrative Engagement Scale (2009) does not include an Imagery sub-scale since it was developed for use with audiovisual media, whereas the Transportation Scale by Green and Brock (2000) and the Story World Absorption Scale by Kuijpers et al. (2014) do include an Imagery sub-scale since they were developed with textual media in mind. Nevertheless, they all have in common that they see absorption as a multi-dimensional construct that includes roughly four dimensions: focused attention, emotional engagement, vivid imagery and transportation or presence.

It is not established, however, how dimensions of absorbed reading relate to *each other*. Are all of these dimensions equally important within a single construct called absorption? Are they causally ordered? Is one aspect more important than the other(s)? Do the dimensions always follow a certain progression or does it vary?

In this paper, the relationships between the dimensions on the Story World Absorption Scale (SWAS, Kuijpers et al., 2014) are explored in five different data sets to come to an understanding of the internal relationships and consistencies of absorbing reading experiences and their progression.

Dimensions of narrative absorption

There are several multi-dimensional instruments available to measure narrative absorption in various media, and the overlap between these constructs informed the identification of the four main dimensions of Story World Absorption (Kuijpers et al., 2014). The first dimension is Attention, which is characterized as a sustained form of concentration on the world of the story, as a consequence of which the reader loses awareness of the world surrounding them, the flow of time, and themselves (Kuijpers et al., 2014, p. 91). The second dimension is Emotional Engagement which denotes feeling for or with the characters of a story, including empathy, sympathy and identification (p. 94). The third dimension of Mental Imagery refers to vivid visual imagery generated by the reader when reading a story (p. 93). The fourth and last dimension is Transportation, which signifies a feeling of having been to the world of the story: without completely losing contact with the actual world, the reader feels as if they have entered the fictional world that they are reading about (p. 94).

As stated when the Story World Absorption Scale was first developed, depending on the text that is being read – or more accurately on the interaction between a text and a reader – some dimensions at one time co-occur (i.e., participants score highly on two of the four dimensions), while at others one is much more prominent than the other (i.e., participants score high on only one dimension). In other words, it was hypothesized that, even though the dimensions share a common latent variable – Story World Absorption – they could function independently of one another (Kuijpers et al., 2014). This hypothesis was formulated based on two distinct pieces of empirical evidence: 1) the correlations between the dimensions are only modest, and 2) the dimensions are able to differentially predict outcomes like enjoyment and impact. For example, Emotional Engagement was the strongest predictor of both enjoyment and impact, whereas

Transportation only contributed to predicting enjoyment but not impact (Kuijpers et al., 2014, p. 117). Busselle and Bilandzic (2009) also found that emotional engagement is the strongest mediator of effects in their construct of Narrative Engagement. This is not to say, however, that Emotional Engagement is the most fundamental aspect of an engaging narrative experience, but simply that it is a strong mediator.

What I am interested in here is the question of whether every absorption experience shares the same core, whether every absorption experience starts the same way, regardless of which dimension is the strongest mediator of effects, and regardless of which text is being read? There are conceptualizations, such as Green and Brock's Transportation construct (2000), that clearly give equal prominence to its aspects. According to them Transportation can be defined as "an integrative melding of attention, imagery and feelings" (2000, p. 701), whereas both the Narrative Engagement construct (Busselle & Bilandzic, 2009) and the Story World Absorption construct (Kuijpers et al., 2014) clearly delineate the dimensions on their construct. Neither one of these three groups of scholars identifies one dimension as the possible core of an engaging narrative experience, nor hypothesizes about a potential natural progression of such an experience.

So far, the only study that has empirically explored relationships between dimensions of its absorption constructs is Kuiken and Douglas' work on the Absorption-like States Questionnaire (ASQ; 2017). The authors found that their Attention dimension (i.e., Open Reflection, involving both Sustained Attention and Attentional Reorienting) takes up a prominent role in absorbed reading. In their model of absorption-like states and their aesthetic and explanatory outcomes, Attention functions as precondition for different types of absorption-like experiences to occur. Their structural equation

modeling shows that different aspects of attentional involvement lead to various types of involvement with the narrative, and subsequently to different types of outcomes.

Based on Kuiken and Douglas' work (2017) we could make the assumption that the initial (precipitating) moment of an absorption experience during reading of narrative text is its attentional component. For most constructs, the attentional component indicates an intense focused attention on reading and the story world, which results in a lower bodily awareness, a lower awareness of surroundings and an altered sense of time (e.g., Gerrig, 1993; Green & Brock, 2000; Busselle & Bilandzic, 2009; Kuijpers, Hakemulder, Tan & Doicaru, 2014). This seems to coincide nicely with earlier descriptions of absorbing narrative experience. In Nell's "Lost in a Book" (1988), a seminal work for the field of absorption research, the aspect of attention was already given a central role in its definition: "Absorption is a full commitment of conscious attention which could lead to 'Reading Trance' which is the extent to which the reader has 'gone away'" (Nell, 1988, p. 77). For Kuiken and Douglas, the attentional component of absorption-like states also involves attentional flexibility (2017).

The other aspects of absorbing narrative experiences can of course come into play during absorption but are less *particular* of such experiences. For example, emotional engagement - a dimension on the Story World Absorption construct (Kuijpers et al., 2014), and the Narrative Engagement construct (Busselle & Bilandzic, 2009) - is an experience that often occurs outside of the context of absorption as well. It is closely related to Identification (Cohen, 2001), which has been empirically distinguished from Transportation (Tal-Or & Cohen, 2010), and is thus not solely an aspect of absorption experiences, but a reader experience in itself.

The dimension that is hardest to disentangle from Attention, however, is Transportation or Presence. Transportation refers to the feeling of being in the world of the story. This experience comes into play when attention is shifted from real world to story world but does not necessarily have to happen once someone is paying close attention to a story. In that sense, Transportation and Attention are still separable. Transportation does seem to take up a different place in the Story World Absorption Construct than Emotional Engagement and Mental Imagery as illustrated by the quote from Nell (1988) at the beginning of this section. This quote seems to imply that focused attention is where the experience of absorption starts. In turn, this focused attention could lead to or transform into a more intense experiential state, such as Transportation within the Story World Absorption construct, Narrative Presence in the Narrative Engagement construct or something like a Trance, as described by Nell.

In this paper, I propose that emotional engagement and the forming of vivid mental imagery help this transformation of pure attention into transportation.

The present research

Given the prominent role of attention in descriptions of absorbed reading, the hypothetical model tested in the present study starts with a focused attention, because of which a reader is more prone to emotionally engage with the story and its characters or to imagine the story world in a vivid manner. Which then might lead to an even deeper form of absorption, namely transportation. This theoretical model is shown in Figure 1 below.

Figure 1. Theoretical model of the relationships between the dimensions on the Story World Absorption Scale.

Obviously, this is an oversimplified model of reading, due to the fact that self-report instruments have their limitations. Participants fill out the scale after they have finished reading, so naturally this cannot tell us anything about the progression of absorption *while* reading. For example, it seems plausible that once a reader is triggered to emotionally engage in a story, this in turn might increase their attention. In other words, there might be feedback loops throughout a whole reading experience. Thus, this model does not portray the entirety and the progression of reading experiences. Rather it can tell us something about the weight of the different dimensions within the overall concept of absorption.

Method

Sample characteristics

Table 1 provides descriptive statistics for the five samples used in the analyses. Three of these samples (Study 1, 2, and 3) were experimental studies investigating, respectively, the relationship between absorption and enjoyment (Study 1 and 2), and the relationship between suspense and absorption (Study 3) (For more detailed

information on the experiment design, materials and results of these studies, see Kuijpers, Hakemulder, Tan & Doicaru [2014] and Balint, Kuijpers & Doicaru [2017]). The other two samples (Study 4 and 5) were the same online survey study distributed among two different samples (one with Canadian psychology students and one with participants from the UK), investigating the relationships between individual differences in personality traits and reading habits on the one hand and different states of absorption on the other. In the online survey study participants chose which text they wanted to evaluate, based on the question “what was your most memorable reading experience of the past year?” (For additional information on the design and results of these two studies, see Kuijpers, Douglas & Kuiken, 2018).

All Studies used the Story World Absorption Scale (Kuijpers et al., 2014), which is a multi-dimensional measure of absorbed reading with 18 items (SWAS). All items were rated on a 7-point bipolar scale (from -3 = “completely disagree” to 3 = completely agree”). Sample items from the four SWAS subscales include: (1) Attention (e.g., “I read in such a concentrated manner that I had forgotten the world around me”); (2) Transportation (e.g., “It seemed like I was in the story world, too”); (3) Emotional Engagement (e.g., “I felt like the main character was feeling”); (4) Mental Imagery (e.g., “I could imagine what the world in which the story took place looked like”). The internal consistencies of the overall scale ranged from $\alpha = .88$ to $\alpha = .95$; and for the separate dimensions from $\alpha = .74$ to $\alpha = .91$ for Attention; from $\alpha = .73$ to $\alpha = .90$ for Transportation; from $\alpha = .75$ to $\alpha = .91$ for Emotional Engagement; and from $\alpha = .66$ to $\alpha = .80$ for Mental Imagery.

	<i>N</i>	Design	Location	Language	Mean Age (<i>SD</i>)	Gender
Study 1 (2012)	270	Experimental	Netherlands	Dutch	18.1 (2.6)	148 female
Study 2 (2012)	129	Experimental	Netherlands	Dutch	26.1 (4.2)	97 female
Study 3 (2013)	308	Experimental	Netherlands	Dutch	21.1 (2.6)	221 female
Study 4 (2015)	264	Online survey	Canada	English	19.1 (2.1)	196 female
Study 5 (2016)	70	Online survey	UK	English	35.7 (11.8)	53 female

Table 1. Descriptive statistics for the five samples involved in the analyses

Data analyses

Structural equation modeling methods in SPSS AMOS were used for the data analyses. In addition to the theoretical model portrayed in Figure 1, a range of additional models was tested. We started with a simple model in which Attention had a simple unidirectional relationship to all three of the other dimensions without mediation. This model was then repeated three times, one for each of the other dimensions in the first position. Comparison of these models fit indices will tell us whether Attention indeed is more of a precondition than the other dimensions.

The next step was to test the theoretical model in Figure 1 in two variations: one with a relationship between attention and transportation and one without. In the last model, we removed the relationship between Mental Imagery and Transportation, as this relationship was insignificant in most of the samples, and instead added a relationship between Mental Imagery and Emotional Engagement.

For evaluation of model fit we used the following indices: Chi-squared, RMSEA and for model comparison we used the TLI, CFI and AIC.

Results

Table 2 provides an overview of the fit indices per model per study. The best model fit per study is highlighted in bold.

	Study 1 (N=270)					Study 2 (N=129)					Study 3 (N=308)					Study 4 (N=264)					Study 5 (N=70)				
	Chi²	RMSEA (LO/HI)	TLI	CFI	AIC	Chi²	RMSEA (LO/HI)	TLI	CFI	AIC	Chi²	RMSEA (LO/HI)	TLI	CFI	AIC	Chi²	RMSEA (LO/HI)	TLI	CFI	AIC	Chi²	RMSEA (LO/HI)	TLI	CFI	AIC
Model 1 Attention	45.37	.23 (.17/.29)	.61	.88	67.37	28.71	.26 (.18/.35)	.84	.92	50.71	60.04	.25 (.20/.31)	.54	.86	82.04	68.08	.29 (.23/.35)	.63	.89	90.08	32.69	.36 (.26/.48)	.33	.67	54.69
Model 2 Transportation	45.72	.23 (.17/.29)	.60	.88	67.72	44.80	.33 (.25/.42)	.75	.87	66.80	117.06	.35 (.30/.41)	.07	.72	139.06	69.91	.29 (.23/.35)	.62	.89	91.91	16.17	.24 (.14/.36)	.70	.85	38.17
Model 3 Emotion	90.88	.32 (.27/.38)	.19	.76	112.88	38.40	.30 (.22/.39)	.78	.89	60.40	75.42	.28 (.23/.34)	.41	.82	97.42	219.39	.52 (.47/.58)	.24	.63	241.39	43.41	.42 (.32/.54)	.09	.55	65.41
Model 4 Imagery	245.65	.54 (.48/.60)	.12	.33	267.65	200.40	.72 (.64/.80)	.20	.40	222.40	227.49	.49 (.44/.55)	.83	.45	249.49	245.58	.55 (.50/.61)	.39	.58	267.58	19.04	.27 (.16/.39)	.64	.82	41.04
Model 5	70.33	.35 (.28/.42)	.05	.81	94.33	26.60	.31 (.21/.42)	.76	.93	50.60	85.23	.37 (.30/.44)	.02	.80	109.23	204.54	.62 (.55/.69)	.74	.65	228.54	32.26	.45 (.32/.59)	.02	.66	56.26
Model 6	8.21	.16 (.07/.27)	.80	.98	34.21	3.64	.14 (.00/.31)	.95	.99	29.64	28.56	.30 (.21/.40)	.33	.93	54.56	47.22	.42 (.32/.53)	.20	.92	73.22	16.88	.46 (.28/.66)	.07	.82	42.88
Model 7	4.70	.12 (.03/.23)	.89	.99	30.99	1.58	.07 (.00/.26)	.99	.99	27.58	.42	.00 (.00/.13)	1.01	1.00	26.42	4.18	.11 (.02/.23)	.95	.99	30.18	9.41	.34	.43	.91	35.41

Table 2. Fit indices per model per study

Dimensional weight

The first question asked was whether attention has the strongest weight within the dimensional structure of Story World Absorption and can therefore be seen as more of a precondition than the other dimensions. The first four models run for each study, show that for four of the five studies, indeed the model that starts with Attention shows the best model fit. The only exception was the UK sample where the Transportation model showed the best model fit. The other four studies show that the Transportation model was a close second after the Attention model, indicating that Transportation is dimension that also holds a lot of weight in the Story World Absorption construct. Perhaps not surprisingly, Attention and Transportation always correlate highly with each other and share a certain underlying conceptual variance.

Relationships between dimensions

The model that showed the best model fit in the case of all five studies was the model which fitted Attention at the front with a uni-dimensional relation to all three

other dimensions, and two additional relationships: one between Emotional Engagement and Transportation and one between Mental Imagery and Emotional Engagement (See Figure 2 below). Based on these results it seems that the hypothesis that Attention leads to Transportation through Emotional Engagement and Mental Imagery can be confirmed, though be it in a slightly altered manner.

Figure 2. Best model fit of the relationships between the dimensions on the Story World Absorption Scale.

General Discussion

This paper aimed to investigate the relationships between the dimensions on the Story World Absorption Scale. Understanding of the internal consistency of the SWAS may help to further understanding of the progression of absorbing reading experiences and facilitate future studies on the nature of such experiences. Results from five different studies – two surveys and three experimental studies – conducted over the course of four years with samples from three different countries, not only provide proof of construct validity of the Story World Absorption Scale through the convergent results across studies, but also show that attention leads to transportation through emotional

engagement, whereby mental imagery supports the mediation through emotional engagement.

The role of attention in absorption

In other words, an increase in a readers' focused attention, makes the reader more prone to emotional engagement and mental imagery. The vivid imagery in turn increases the potential for emotional engagement, which in the end can lead to the reader experiencing the world of the story as if they 'were there'. These results seem to confirm the hypothesis that attention plays a more important role in absorbing reading experiences than the other three dimensions. Perhaps it can even be argued that absorption in general *is* a form of attention. It can be distinguished from other forms of attention by the fact that it has a narrow attentional breadth (i.e., the story that is being read) and a high present moment orientation (i.e., forgetting worries and distractions) (Dane, 2010). Apart from that it can be described as a deep form of concentration sustained over a longer period of time, while at the same time a person who is absorbed exhibits a sustained readiness to shift attention; that is, within the reach of the attentional object (i.e., the book that is being read) and without breaking concentration (Kuiken & Douglas, 2017). One possible way to interpret these results is that attention is at the core of absorption; it is a precondition for the other dimensions of Story World Absorption to occur, and in that respect, it is a replication of the results that Kuiken and Douglas (2017) found for their Absorption-like States Questionnaire.

In addition to sustained attention being required for Story World Absorption to occur, the locus of attention within a Story World Absorption experience can shift from one aspect of the story world to another. For example, at one time a reader is completely focused on Emotional Engagement with the protagonist and in the next moment they

shift their attention readily to generate vivid Imagery of the scenery described in the story. As long as these shifts of attention take place within an overall sustained attention on the story world, they can be considered part of the Story World Absorption experience.

These results have consequences for how we evaluate findings of studies using multidimensional constructs of absorption, especially of studies who do not delineate between the four dimensions, but only look at the overall score on absorption. What does it mean when a participant scores low on the Attention dimension of Story World Absorption, but high on the Emotional Engagement dimension? If focused attention is not there, can we still call that participant's experience a Story World Absorption Experience? And are we, by extension, stating that a reader can be emotionally engaged in a story, without being absorbed in it? As already mentioned in the introduction to this paper, it is harder to disentangle Transportation from Attention as the former is more clearly – than the dimensions of Emotional Engagement and Mental Imagery - an extension of the latter. Thus, it seems unlikely that the same participant would score low on Attention, but high on Transportation. These are questions that should be more closely examined and reported on in every study using multi-dimensional constructs of absorption.

Progression of absorbing reading experiences

The findings also point to a possible progression of absorbing reading experiences; from attention, through emotional engagement and mental imagery, to transportation. As stated in the introduction, this progression remains purely theoretical, in that these data cannot tell us anything about the actual progression of reading experience as they happen. There could be multiple feedback loops involved in an actual reading

experience, especially in a long reading experience such as provided in a natural context outside of the lab. We will only be able to put this theoretical progression to the test once we know how to measure absorption *while* it is happening. For this we need objective instruments such as eye tracking or other psychophysiological measures that do not require the researchers to interrupt their participants to ask about absorption levels.

Future research

This paper hopefully paved the way for further research into the nature of absorbing narrative experiences. The first step would be to investigate the dimensional relationships within similar constructs such as the Narrative Engagement Scale (Busselle & Bilandzic, 2009) and the Transportation Scale (Green & Brock, 2000). This would be to confirm whether the findings presented here and the ones of Kuiken and Douglas (2017) are particular to the psychometric properties of the scales that were used, or whether they can be generalized and attributed to the conceptual notion of absorption experience itself.

An obvious next step would be, as Kuiken and Douglas (2017) did, to expand the structural equation model to include outcomes of absorbed reading or even individual differences between participants that predispose them to absorbing reading experiences and specific reading outcomes. Perhaps certain type of readers will exhibit relationships to specific dimensions of absorbed reading. For example, reading habits such as reading frequency or reading motivation might influence the configuration and dimensional weight of the dimensions on the Story World Absorption construct (cf. Kuijpers, Douglas, & Kuiken, 2019).

And lastly, it would be interesting to conduct a series of experimental studies using different text genres to explore whether the relationships within the model shift from one genre to the next.

However, all of these suggestions would still function as ways to validate the results presented in this paper. Once we have established that Attention is indeed the initiating component of absorbing narrative experiences, we can take empirical research into absorbed literary reading to the next level. To progress absorption research, objective measures are needed, but as there are so many aspects to absorbing reading experiences it is hard to know where to start and which psychophysiological measures to use. With a confirmation that Attention is at absorption's core, we already know to start our search for measures by looking at instruments or techniques that capture attentional focus, such as eye-tracking measures. The use of objective measures will allow us to study absorption while it is happening and determine, amongst other things, its progression and the specific textual features that inspire it.

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