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Narrative Absorption: An Overview

Abstract: Narrative absorption is an umbrella term for a specific mental state that, in general, can be described as altered embodied, cognitive, and emotional processes of being invested into the content of a fictional story (e.g., Nell, 1988). This chapter discusses the most recent developments within the field of narrative absorption research and embeds those developments in the context of more established research on the topic.

Introduction

Research on narrative absorption has grown exponentially over the last few decades and in the last couple of years has seen some interesting divergences. There are researchers who try to establish construct validity for their conceptualization of narrative absorption by testing its correspondence with computational, behavioral, experiential and physiological measures, as well as theoretical models of reading (e.g., Hsu et al., 2014; Jacobs, 2015; Jacobs & Lüdtke, 2017; Sukalla et al., 2015), and there are those who examine the relationship of narrative absorption to other constructs of interest in the field, such as aesthetic outcomes (e.g., Bálint et al., 2016; Kuijpers et al., 2019; Kuiken & Douglas, 2017) or the concept of flow (Thissen et al., 2018). In addition, the research has also expanded to include studies that have originated in alternative fields such as medical humanities (e.g., Billington et al., 2016; Billington et al., 2010) or that are using new methodologies such as neural nets and machine learning (e.g., Jacobs & Lüdtke, 2017; Rebora et al., 2018). Narrative absorption as an experiential state can be distinguished from the recipients' trait-like tendency to become absorbed in a story (see Kuijpers et al., 2017). The latter is referred to by concepts such as *trait absorption* (Tellegen & Atkinson, 1974), *transportability* (Dal Cin et al., 2004) or *narrative engageability* (Bilandzic et al., 2019). This chapter primarily focuses on narrative absorption as an experiential state. We begin with a brief overview of the contemporary theories and concepts related to narrative absorption. For those who are interested in a more detailed discussion of the various concepts, see the anthology entitled *Narrative Absorption* (Hakemulder et al., 2017).

The conceptual origin of absorption can be traced to positive psychology and the concept of flow, one of the most influential concepts in the early history of the field, introduced by the US based psychologist, Csikszentmihalyi (1975; 1990). Described as a self-regulating experience with a perfect skill-challenge balance, the term flow is used to describe a unique state of consciousness associated with increased attentional focus, altered sense of control and time, as well as decreased self-consciousness (e. g., sports activities and literary reading; Csikszentmihalyi, 1990). Approaching the notion of absorption from a different perspective, a decade later Nell (1988) began his doctoral project on *ludic reading* in South Africa. The author conducted experiments to examine the phenomenology and the psychophysiological indicators of the absorbed reading experience, likening ludic reading to trance and other altered states of mind, such as hypnosis.

From the late 1990's onward, increasing emphasis has been given to absorbed experiences with different kinds of non-narrative (e. g., computer software, games, and virtual reality) and narrative media (e. g., books, films, and interactive stories). Important concepts are *presence*, that is the perceptual illusion of being in a non-mediated virtual reality environment (Lombard et al., 2000; Witmer & Singer, 1998), and *cognitive absorption*, that is an altered sense of time, increased attention, enjoyment and curiosity while using computer software or browsing the internet (Agarwal & Karahanna, 2000).

The above-mentioned concepts, such as flow or presence, delineate absorption-like experiences with a broad range of media, whereas the term *narrative absorption* is specific to absorption-like experiences elicited by stories. Concepts like *transportation* (Gerrig, 1993; Green & Brock, 2000), *immersion* (Ryan, 2015; Schrott & Jacobs, 2011), *narrative engagement* (Busselle & Bilandzic, 2009), and *story world absorption* (Kuijpers et al., 2014) refer specifically to *narrative* experiences. Transportation, immersion, and story world absorption were developed with textual stories in mind, whereas narrative engagement is more suited to audio-visual narratives. There are important differences in how these authors theorize about the underlying mechanisms of the narrative absorption experience. Green and colleagues' (see Green & Donahue, 2008) transportation-imagery model stresses the crucial role of readers' elicited *mental imagery* in transportation, while Busselle and Bilandzic (2008) identify *narrative understanding* as a core process underlying narrative engagement, informing the creation of mental models of the story world, which are constantly and smoothly updated throughout a person's engagement with a narrative. Kuijpers et al. (2014) put a special emphasis on the reader's sense of psychological relocation (or *deictic shift*, as in Segal, 1995) into the fictional story world.

Other authors focus on absorption as a multifocal construct, including articulations of the *experience* of such psychological relocation and personal identification (Kuiken & Douglas, 2017). The Absorption-like States Questionnaire (ASQ, Kuiken & Douglas, 2017) consists of multiple subscales, of which three have been focal (*Open Reflection*, *Integrative Comprehension*, and *Expressive Enactment*) in research so far. Open reflection is a kind of openness to reflecting on the narrative that captures attention (e. g., *resisting personal distraction*) and time perception (e. g., *altered sense of time*.) Integrative comprehension refers to the reader's perception of the character's actions and psychological and spatial perspective as realistic and broadly understandable (e. g., *cognitive perspective taking*) (p. 230). Expressive enactment consists of *pre-enactive empathy*, which is "the fusion of one's own and another's embodied intentionality that provides a resonant felt sense" (p. 231), *peri-personal space*, which is the sense of physical presence in the fictional world for objects within "bodily reach" (p. 229), and *self-implicating givenness*, which refers to the reader's perception that their own first-person experience facilitates the explication of the character's psychological world (p. 233). In the Kuiken and Douglas (2017; 2018) standard model, Open Reflection predicts both modes of absorption (i. e., Expressive Enactment and Integrative Comprehension). The ASQ thus includes qualitatively different kinds of absorption with built in discriminant validity paths from Open Reflection to different outcome measures.

Other research also utilizes path models, but with a focus on the underlying cognitive processes of absorption and an emphasis on interrelated neurological processes. This perspective is captured in the Neurocognitive Poetics Model (NCPM) of absorption (Jacobs, 2015; Jacobs & Willems, 2019; for a detailed description, see Schrott & Jacobs, 2011), which describes two separable paths during the reading of either narrative or poetic texts. According to this model, one path mainly supports absorption and the other path is either inactive or inhibited when absorption is experienced, depending on the factors that control immersive versus aesthetic processes (cf. Jacobs, 2015). The absorption path is characterized by processes such as familiarity, fluency, heightened (unforced) attention, empathy, identification, and fiction feelings (e.g., suspense, curiosity, and surprise). The second path comprises processes sensitive to stylistic foregrounding (Jacobs & Willems, 2018) and can be thought of as a competing attentional resource system. In this conceptualization, an implicit contrast between two attentional resources is made – one that focuses on sustained attention and the other on attentional flexibility – which can be contrasted with the shifting between resource systems in attention during narrative absorption as conceptualized by Kuiken and Douglas (2017). Where the NCPM thinks of absorption as heightened and unforced sustained concentration, recent research

on absorption has conceptualized absorption as including both sustained concentration and attentional flexibility (i.e., Kuiken & Douglas, 2017) and has shown that story world absorption (which only includes sustained concentration in its conceptualization) can occur when reading deviating text features (Kuijpers, 2014).

Assessment of Self-reported Absorption

The following section includes a survey of how methodological and measurement concerns with construct validity are addressed in various self-report measures of narrative absorption, including *Transportation*, *Narrative Engagement*, *Story-World Absorption*, *Absorption-Like States*, and *Flow*. These measures of narrative absorption will be compared specifically based on (a) internal validity, including dimensionality (uni-dimensional vs. multi-dimensional conceptualizations); (b) external validity (convergent vs. discriminant validity) regarding similar, but distinct measures (e.g., *Story World Absorption* and *Absorption Like States*); and (c) external validity (convergent vs. discriminant validity) regarding distinct, but similar measures (e.g., *Need for Cognition* and *Transportation*).

Transportation Scale. *Transportation* has been described as absorption into a story, including imagery, affect, and attentional focus. In terms of dimensionality, although the *Transportation Scale* was conceptualized as being composed of cognitive, affective, and imagery items (Green & Brock, 2000), the lack of discriminant validity for these scales resulted in the development of a uni-dimensional measure. This oversight was addressed, to some extent, in follow-up work on the short form of the *Transportation Scale*. In this work, some distinction between unique and shared factor variance was provided for these hypothesized scales (Appel et al., 2015). Despite the use of bifactor-modeling to distinguish shared and unique variance, however, there are only six items across these aspects of *Transportation*, and more work is required to demonstrate convergent and discriminant validity for these subscales. With the higher order *Transportation Scale*, convergent validity was provided through an experimental design that demonstrated shifts in the attitudes and beliefs implied in the story, that is, *Murder in the Mall* (Green & Brock, 2000). Although discriminant validity is limited, in later work, *Transportability* as a trait measure corresponds closely to the state measure (*Transportation*), demonstrating strong test-retest reliability and internal validity (Dal Cin et al., 2004). Discriminant validity was demonstrated in particular for the state *Transportation Scale* (short form) and *Resistance to Persuasion*, and the long form *Transportation Scale* and *Need for Cognition*. Evidence was also provided for convergent validity in studies

with the short version of the Transportation Scale (including empathy and prosocial behavior; Johnson, 2012).

Narrative Engagement. The Narrative Engagement Scale is designed to measure how readers engage with stories and is often used to investigate outcomes of narrative understanding, such as story related attitudes or beliefs (Busselle & Bilanzic, 2009; Bilanzic et al., 2019). The measure is multidimensional with four subscales (*Narrative Understanding*, *Attentional Focus*, *Emotional Engagement*, and *Narrative Presence*). Both an exploratory and a confirmatory factor analysis were conducted on the state and similarly worded trait version of the scale, *Narrative Engageability* (Busselle & Bilanzic, 2008; 2009; Bilanzic et al., 2019). Also, good reliability was reported for the state and trait versions of the scale. With Narrative Engagement, convergent validity was demonstrated with *Transportation* and *Identification* (Busselle & Bilanzic, 2009). Convergent and discriminant validity was also demonstrated for *Narrative Engageability* and its subscales with Need for Affect, where Accepting Unrealism demonstrated some discriminant validity.

Story World Absorption. The Story World Absorption Scale (SWAS) captures experiences with narrative worlds with four subscales (*Attention*, *Transportation*, *Emotional Engagement* and *Mental Imagery*; Kuijpers et al., 2014). Good reliability was reported for the SWAS and its subscales, and both an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) were conducted, with good model fit. Convergent validity was provided with variables that should be related to the SWAS (e.g., *enjoyment* and *impact*; Kuijpers et al., 2014), and with the Transportation scale and Narrative Engagement scale (Kuijpers et al., 2014), as well as with the Absorption-Like States Questionnaire (ASQ; Kuijpers et al., 2018).

Absorption-Like States. The Absorption-Like States Questionnaire is a measure of absorption that includes a predictive relationship in which *Open Reflection* (composed of sustained attention and shifting to narrative time) predicts *Expressive Enactment* and *Integrative Comprehension*; Kuiken & Douglas, 2017; 2018; Kuijpers et al., 2018). Good reliability was reported for the ASQ and its subscales, and both an EFA and a CFA were conducted, with good model fit. Convergent and discriminant validity has been provided for Expressive Enactment and Integrative Comprehension with metaphor ratings (Kuiken & Douglas, 2018) and trait variables (Kuijpers et al., 2018).

Flow. The Reading Flow Short Scale (RFSS) is a three-factor scale (*Absorption*, *Smooth Processing*, *Global Flow*) that has been described as a measure of reading pleasure that derives from a balance between skill in reading and comprehension of difficult text (Thissen et al., 2018). The *absorption* subscale captures time perception and consists of attention-based items. The *Smooth Proc-*

essing subscale is captured by an automaticity of thought, emotion, and image generation during reading. Lastly, *Global Flow* is a generalized form of flow including skill-challenge balance. Good reliability was reported for the RFSS and its subscales, and both an EFA and a CFA were conducted, with good model fit. Convergent validity was provided between the subscales of the RFSS in three ways: (a) reading variables (e.g., *Reading Pleasure*); (b) previous reading-related flow experiences (e.g., *Frequency of flow in fictional texts*); and (c) concepts of pleasure-related narrative engagement (e.g., *Presence*; see Thissen et al., 2018). Discriminant validity was provided with variables similar to flow (e.g., *Presence*), and factors that should be related to flow, but are different constructs (e.g., *Cognitive Mastery*). However, the form of structural equation modeling used by the researchers did not directly contrast outcome variables, which would be beneficial in the future.

Comparison of Absorption Models. Some of the differences in methods reflect differences in the motivation for scale development. The Transportation Scale and the Narrative Engagement Scale were constructed to predict specific experimental outcomes (e.g., variations in reported attitudes and beliefs), whereas Flow was designed to capture reading enjoyment, and both the SWAS and ASQ were designed to capture the experience of the narrative world. Also, the ASQ was designed to capture contrasting forms of absorption.

Components of Self-Reported Absorption

As observed earlier by Kuijpers et al. (2014), most of the self-report instruments discussed above overlap in the components that are part of their conceptualizations of narrative absorption. The four focal components seem to be attention, mental imagery, emotional engagement, and transportation (cf. Kuijpers et al., 2014, for an earlier discussion of overlap between these four components). Of course, there are other components included in some of the measures discussed above, such as narrative understanding (Busselle & Bilandzic, 2009), verisimilitude (Kuiken & Douglas, 2017), global flow (Thissen, et al., 2018), or “suspense,” and “lingering story feelings” (Appel et al., 2002; our translations of the original German components). However, as these components do not appear on more than one self-report measure in the area of narrative absorption research, they are not discussed here.

Attention

Attention in absorption has been addressed in two areas of research. Within the first area of research focusing on “flow experiences,” attention is considered as a component process that emerges in relation to how skill and difficulty are balanced (Thissen et al., 2018) and as a synchronization of attention and reward networks (Weber et al., 2009). Within the second area of research focused more generally on “absorption,” both sustained concentration (also attentional narrowing; Carleton et al., 2010) and attentional flexibility or attentional reorienting are important (Kuiken & Douglas, 2017). Sustained concentration during narrative reception has been referred to as “deep concentration” (Kuijpers et al., 2014), “attentional focus” (Green & Brock, 2000), and absence of “distraction” (Busselle & Bilandzic, 2009). Whereas all of these conceptualizations of attention include selective attention to task-relevant information and resistance to distraction by task-irrelevant information, they differ on what is captured using the self-report measures described above. Where Busselle and Bilandzic (2009) explicitly link their attention measure to underlying cognitive processes such as narrative understanding and situation model building, Kuijpers et al. (2014) aim to capture the felt experience of an attention so focused that the reader is able to forget the world around them. They argue that when someone is absorbed they are unaware of themselves, including the cognitive processes that are going on in their mind while reading. Of course, sustained concentration during reading is modulated by text comprehension, including selective attention to text meaning and resisting distraction by meaning-irrelevant personal concerns (e.g., autobiographical diversions; Sikora et al., 2011) or task requirements (e.g., medium interference; Mangen & Kuiken, 2014). More recent research has explored the function of a distinct attention sustaining or narrowing – such as while reading or viewing suspenseful narratives (Bezdek & Gerrig, 2017).

Crucially, what remains largely unexplored is the extent to which narrative structures facilitate absorption through attentional reorienting (e.g., on attentional flexibility, Kuiken & Douglas, 2017; on how attentional reorienting may inform the relationship between textual and personal narrative structures, Goldie, 2012, and Douglas, 2019). Attentional reorienting is a two-part process involving disengagement from currently focal task-relevant information and attention redirection to unexpected task-relevant information – including the active utilization of this unexpected information (Kuiken & Douglas, 2017; Peterson & Posner, 2012). Important in this integration is the conceptualization of this unexpected information, not merely as disconnected surprise, but as

continuity between what is unexpected (e. g., a connected memory) and what is narratively focal to reflective elaboration of those unexpected meanings. The interaction between sustained concentration and attentional reorienting creates tension between resistance to distraction by task-irrelevant information and readiness to shift attention to unexpected task-relevant information. Because the capacity for sustained concentration and the capacity for attentional reorienting are uncorrelated (Fan et al., 2002), their integrated function – and resolution of this tension – requires further articulation and empirical exploration (see Kuiken & Douglas, 2017, for a first exploration of this dynamic system termed “Open Reflection”).

Deictic shift

Even though this particular component of narrative absorption has been given different names in various self-report conceptualizations, such as “narrative presence” (Busselle & Bilandzic, 2009), “aesthetic illusion” (Wolf, 2004), “deictic shift” (Duchan et al., 1995; Segal, 1995) or “transportation” (Kuijpers et al., 2014), the experience it signifies is the same in all of these constructs, namely the feeling of traveling to the world of the story, being present or a part of that world, having made a deictic shift from the actual here and now to a fictional – or possible (Wolf, 2004, p. 325) – here and now. Even though Green and Brock’s Transportation scale (2000) purports to capture this same experience (judging by the name of the instrument), the scale’s items do not actually capture the movement of the reader into the story world or their feeling of being present in that world. Rather, Green and Brock consider transportation to be a “distinct mental process, an integrative melding of attention, imagery and feelings” (2000, p. 701). The notion of narrative presence, in particular, is quite popular in other narrative media studies, such as game studies. Lee (2004), who introduced the construct of tele-presence in the field of games studies, uses it to refer to the feeling of complete presence in the fictional game world, usually achieved when using virtual reality technology. This conceptualization differs from the ones described above and used in film and literature studies, as in those cases contact with the physical world remains intact during a deictic shift.

Mental Imagery

The Transportation Scale (Green & Brock, 2000) and the Story World Absorption Scale (SWAS, 2014) include a mental imagery component that focuses on vivid *visual* imagery instigated by characters, surroundings and events described in the text. Recently, in efforts to reconceptualize the SWAS to account for descriptions of absorption in online reader reviews (Rebora et al., 2018), the notion of mental imagery was extended to include auditory, olfactory, and tactile imagery, because it seems that absorbed readers' mental imagery can extend to these senses. Busselle and Bilandzic (2009) Narrative Engagement Scale does not include a mental imagery component, as it was originally developed for use with audiovisual media, where mental imagery plays a much different role. As pointed out by Kuijpers et al. (2014) the Perspective Taking component on the Narrative Engagement Scale could be seen as an extension of mental imagery in the context of film viewing. However, in the context of literary reading, perspective taking or identification (Cohen, 2001) is mostly seen as part of emotional engagement.

Emotional Engagement

Even though a component of Emotional Engagement is included in practically every reading experience measure, especially absorption measures, the range of experiences captured in such a component varies greatly. Kuijpers et al. (2014) include feelings for or with characters, such as sympathy, empathy, and identification or perspective taking, in their conceptualization of emotional engagement. Interestingly, in Cohen's (2001) Identification measure, the notion of identification was operationalized as containing four components: empathy, cognitive perspective taking, vicarious experience, and absorption. This raises the question of how narrative absorption and emotional engagement are related, a question that Tal-Or and Cohen (2010) approached using exploratory factor analyses to compare Cohen's Identification measure with Green and Brock's Transportation measure. They found that the two experiences can be reliably separated but are still closely related to one another. The question of whether absorption is part of emotional engagement, or the other way around, has not been empirically answered.

Busselle and Bilandzic's emotional engagement component includes a general sense that "the story affected me emotionally" (2009, p. 337), which is also how Green and Brock (2000) conceptualized emotional engagement on their

Transportation scale. The ASQ (Kuiken & Douglas, 2017), as a whole, provides a nuanced conceptualization of character engagement and, in that sense, is closely related to the emotional engagement concepts of story world absorption and narrative engagement.

Correlates of the Components of Self-Reported Absorption

Empirical investigations of physiological correlates of absorption are still scarce (cf. Schlochtermeyer et al., 2015). In a recent overview by Jacobs and Willems (2018), the authors state that only a few papers have been published so far discussing the behavioral and neural correlates of absorbed reading. They argue that this is mainly because absorption in fiction is “multifaceted, conceptually far from being unified, and difficult to measure empirically” (2018, p. 150). The studies the authors list as examples of behavioral studies of absorbed reading focus mostly on poetry reception and experiences akin to absorption, such as “affectively resonating with the depicted state of affairs” (Jacobs et al., 2016). There are a few studies that investigate the physiological or behavioral correlates of multi-dimensional conceptualizations of absorption of the kind discussed above. None of these studies, however, try to capture narrative absorption “holistically,” that is, to investigate the potential correlates of narrative absorption as a sum of all its components.

For example, Van den Hoven et al. (2016) investigated the relationship between reading foregrounded elements in a text and the retardation effect (i.e., slowing down during reading), including the extent to which the immersion that readers experience influences this relationship. In their study, immersion was assessed with a questionnaire that adapted items from the Story World Absorption Scale (Kuijpers et al., 2014) and from the Narrative Engagement scale (Busselle & Bilandzic, 2009). These items contributed to five different factors: Empathy, Self-Loss, Imagery, Compassion, and Understanding (Van den Hoven et al., 2016). They found that none of these factors correlated with the effect of foregrounding on reading time (i.e., reading foregrounded words more slowly). As the authors argue, this is a null effect and should therefore be considered carefully but, based on these results, they argued that absorption does not seem to slow down reading.

Another study of the physiological correlates of absorption is Sukalla et al.’s investigation of the physiological correlates of narrative engagement dur-

ing film viewing (2015). These authors looked at the components of narrative engagement (Busselle & Bilandzic, 2009) separately (specifically, the narrative understanding, attentional focus, and emotional engagement dimensions), as well as their relationship to narrative content and their correlations with certain physiological measures. This study provides convincing evidence for the multidimensionality of absorption constructs “whose different dimensions reflect different content and different types of information processing” (Sukalla, 2015, p. 10). More importantly, though, this study suggests that using physiological measures to capture the various psychological processes involved in an absorption experience is nearly impossible. Most physiological measures can be interpreted in several different ways, especially in the complex context of a narrative absorption experience, which consists of innumerable variables that all interact with each other: differences between readers; passages that are read; the context of the experiment; and the particular self-report measure that is used to capture absorption. Below the findings on physiological correlates of absorption are described for each of the four components outlined above.

Attention

As attentional focus is at the core of an absorption experience, with a loss of awareness of self and surroundings as a consequence (Carleton et al., 2010; Kuijpers, 2014; Kuiken & Douglas, 2017), “imperviousness to distraction” is unsurprisingly a central behavioral correlate of absorption. This is theoretically a major component of absorption, and it also forms the basis for the hypotheses tested by Bezdek and Gerrig (2017). In a series of experiments, Bezdek and Gerrig tested whether people’s attention during absorption while watching a suspenseful movie was captured in a dynamic fashion over the course of the experience. They did this by focusing on so-called hot spots, i. e., moments in movies when potential negative outcomes are emphasized and contribute to the underlying mechanisms of suspense. They measured narrowing of attention through latencies in reaction time to auditory probes while participants were watching excerpts from suspenseful movies. They found that participants missed more probes and exhibited slower reaction times during hot spots, in contrast to cold spots, in suspenseful movies. More importantly, they found that participants displayed slower reaction time during excerpts for which they reported greater transportation (Bezdek & Gerrig, 2017, p. 81) (cf. Cohen et al., 2015 on secondary tasks and transportation).

A body of conceptually related work, including mind-wandering during reading (e. g., Barron et al., 2011; Smallwood et al., 2008; Uzzaman & Joordens,

2011) or “mindless versus mindful reading” (e.g., Franklin et al., 2011; Reichle et al., 2010; Schad et al., 2012) has ventured into empirical studies on the effects of distractions that are either internal (i.e., errors in the text) or external (i.e., exposing participants to distracting audio-visual stimuli during reading) to the texts that are being read. These studies, taken together, suggest that absorption coincides with mindful reading, but not with mindless reading or mind-wandering during reading. On the other hand, some argue that absorbed reading of fiction and mind-wandering are very similar experiences. For example, Jacobs and Willems (2018) argue that these activities are connected through narrative construction, as internally focused cognition, mind-wandering, and mental model construction (the principal cognitive process underlying absorption, according to Busselle & Bilandzic, 2009) are all forms of meaning making or storytelling (2018, p. 150).

With respect to potential physiological and behavioral correlates of the components of absorption as described above, only a few studies investigate the attention component. One eye tracking study by Mak and Willems (2019) looks at absorption during literary reading, especially descriptions of mental simulation. They found that, when reading motor simulation descriptions, participants who score high on attention (as measured by the attention component on the Story World Absorption Scale) read them more slowly (as measured by gaze duration) than other participants. The opposite was true for the same participants when reading mental event descriptions; that is, people who scored higher on attention read these kinds of descriptions more quickly.

Another recent study, by Sukalla et al. (2015), looked at absorbed film viewing and found that attentional focus was negatively predicted by mean levels of heart rate and positively predicted by increases of skin conductance over time. However, the authors do not give a clear interpretation of why they think mean levels of heart rate and increases in skin conductance correlated with attentional focus. As they explain in their discussion, because of the multitudes of variables involved, it is very difficult, if not impossible, to interpret the results of such studies.

Mental Imagery

A recent study by Mak and Willems (2019) investigated the effects of different forms of mental simulation on eye movements and self-reported absorption (as measured by the Story World Absorption Scale). They found that descriptions of motor simulation were associated with shorter gaze durations and thus faster reading, whereas descriptions of perceptual simulation and mentalizing were

associated with longer gaze duration and slower reading. The strength of the relationship between motor simulation descriptions in a literary text and shorter gaze durations was positively associated with mental imagery (the effect approached statistical significance); people who reported higher mental imagery during reading read motor descriptions more slowly than others. Interestingly, the effects of mental simulation descriptions on absorption were stronger for some of the other components, such as attention and transportation.

Emotional Engagement

The same study by Mak and Willems (2019) showed that all three types of mental simulation descriptions (motor, perceptual, and mentalizing) had an effect on emotional response. People who reported high levels of emotional response read motor descriptions even faster than other participants, whereas the opposite was true for perceptual simulation descriptions and mentalizing descriptions. However, emotional response was measured with items adapted from the appreciation questionnaire (Knoop et al., 2016), which was comprised of these items: sad, tragic, ominous, deeply moving, and suspenseful. Similar effects were not found for the emotional engagement component of the Story World Absorption Scale (Kuijpers et al., 2014).

Sukalla et al. (2015) found that the cohesion of story events and emotional-ity of story content consistently changed self-report measures of narrative understanding, whereas higher negative emotional content lead to higher scores on emotional engagement (as measured by the Narrative Engagement scale). They also found that emotional engagement was positively correlated with corrugator activity and increases in levels of skin conductance over time. These results correspond to more general studies in which arousal is indicated by higher skin conductance levels. Similar findings for physiological correlates of emotional engagement, specifically arousal, were found in a study in which participants listened to an emotional story. Wallentin et al. (2011) found that intense emotional story passages were accompanied by an increased sympathetic response, as measured by heart rate variability.

Deictic Shift

The least amount of physiological research has been done on the deictic shift, which is perhaps unsurprising given its mostly metaphorical nature. This may explain why Sukalla et al. (2015) had clear predictions regarding physiological

correlates for all of the components of the narrative engagement construct, except for narrative presence (p. 5). Nevertheless, they found that narrative presence was significantly predicted by levels of skin conductance, which the authors interpret as an indication that narrative presence is negatively related to arousal. One other study by Mak and Willems (2019) that looked at absorption during literary reading and used all of the components of the Story World Absorption Scale, found that participants who scored higher on transportation read perceptual content comparatively slower, an effect that was almost replicated for reading mentalizing descriptions. However, descriptions of motor simulation had the opposite effect, which almost reached significance.

Determinants of Narrative Absorption

The following section gives an overview of the antecedent conditions for narrative absorption. First, we discuss situational media-specific determinants, such as medium type and text properties, and then we continue with dispositional reader-specific determinants.

Absorption in Different Media

Narrative absorption has been empirically investigated in a number of different media contexts, but direct comparison of media is scarce. In theory, the affordances of different media may modify the absorption experience. However, empirical evidence supporting this claim is limited and inconclusive. One of the most comprehensive reviews of absorption in different media is by Schlochtermeier et al. (2015). The authors propose that complexity (i. e., from words/pictures to whole textual/visual narratives) and realism (i. e., from line drawings to virtual reality) are two crucial factors that influence the absorption potential of a medium. More complex materials that present a narrative and social relationships are more likely to induce social cognition responses, such as embodied simulation and mentalization, whereas dynamic and multimodal media formats (e. g., 2D and 3D movies) are associated with strong emotional responses. Their review concludes that all media types have potential to elicit emotional responses, the intensity of which would be defined by the “complex interplay of emotional information with language and sensory properties of a stimulus” (p. 43).

A major challenge in designing an experiment that compares media is manipulation of the stimulus material. To test the effect of modality on narrative absorption, the same story content needs to be presented in a textual and audio-visual format such that all information presented in one medium is described or shown in the other as well. Three studies in communication science found no effect of modality on narrative absorption (Bálint et al., 2017; Dal Cin et al., 2004; Green et al., 2008). However, in a study by Walter et al. (2017), participants who watched a film version reported a higher level of cognitive and emotional involvement than participants who read a printed version of the same story. Interestingly, the film version also elicited higher levels of reactance in film viewers compared to readers. This could be because, as Green et al. (2008) propose, movies provide visual information on the “look” of the characters and surroundings, while readers are required to build a mental image of characters and events when reading a book. As corroboration, Green et al. (2008) showed that, compared to viewers of the same story, readers reported higher levels of perceived effort during reception. The increased activation of mental imagery might affect the experience of narrative absorption, if not in intensity then in the relative activation of its sub-components. For example, vividness of violence in films elicited higher levels of emotional involvement, attention, and overall narrative absorption, as measured by the transportation scale (Riddle, 2013).

Textual Determinants of Absorption

Research on the textual determinants of absorption has grown in the last couple of years. We now know that suspense structures in both films and literary texts increase self-reported narrative absorption (Bálint et al., 2017), that first person perspectives in video games lead to more narrative presence (Van Vught & Schott, 2017), that evoked realism is pivotal in producing emotional responses and a feeling of transportation (Dixon & Bortolussi, 2017), and that foregrounding and deviation can lead to feelings of absorption when reading short stories (Kuijpers et al., 2014) or when viewing films (Bálint et al., 2016).

More recently, using methods from the digital humanities, the effect of genre on absorption is being investigated (Rebora et al., 2018). There are several book review websites where people discuss their experiences with certain books and on most of these websites people’s responses can be sorted by the genre they have read. Rebora et al. have annotated reviews for matches with statements on the Story World Absorption Scale (Kuijpers et al., 2014). Based on this corpus of annotations, they taught a machine how to recognize the four dimen-

sions of story world absorption in a different, larger set of reviews from the same website. They found that matches to the emotional engagement dimension occurred most in reviews on books from the romance genre, whereas matches to the transportation dimension occurred most in reviews on books from the fantasy genre. Obviously, whether a reader feels absorbed in a certain genre narrative depends to a large extent on their genre preferences, but this line of research shows evidence that genre also seems to influence type of absorption independently of individual differences in genre preference. Applying computational approaches to large-scale corpora of reader reviews has compelling potential for the study of reader response as a whole, not just for the study of narrative absorption. For example, a similar approach to the one that Rebora, Lendvai, and Kuijpers have taken could be used to analyze the outcomes of absorbing reading experience, in terms of enjoyment, aesthetic outcomes, or effects on well-being.

Personality Traits and Reading Habits

The relationship between absorption and personality traits has been investigated directly, especially in relation to openness to experience (Kuijpers et al., 2019) and indirectly in relation to attachment style (Silver & Slater, 2019). A global measure of openness to experience, the Tellegen Absorption Scale, has been shown to predict state absorption directly and mediated by reading habits (Kuijpers et al., 2019). Insecure attachment may lead to motivation for becoming absorbed in narrative worlds through the vicarious (and safe) development of relationships with mentally simulated characters (Silver & Slater, 2019).

One recent research endeavor focuses on predictors of absorption that lie somewhere between individual differences in readers and variability in text, namely readers' sensitivity to certain word characteristics. Eekhof et al. (2021) found that three different word characteristics (word frequency, age of acquisition, and orthographic neighbourhood size) influenced the length of gaze durations and that the degree of sensitivity to these word characteristics was negatively related to self-reported narrative absorption. An experience of absorption during reading is associated with a decreased sensitivity to word characteristics. On the one hand, the shift away from word processing that seems to characterize an absorption experience might allow a reader to spend more cognitive resources on the construction of situation models, which is an important part of absorption. On the other hand, the decreased sensitivity to word characteristics

could point to the occurrence of a reading experience that is overall considered more fluent and therefore absorbing.

The same study also found that individual differences in print exposure attenuated the sensitivity to word characteristics. More skilled readers were less influenced by lower-level word characteristics. This finding is consistent with other studies in which print exposure or related measures of reading skill or reading frequency mediate the effect of traits on absorption during reading (Kuijpers et al., 2019) or mediate the effect of text features on absorption (Kuijpers, 2014).

Outcomes of Absorption

Evaluative Responses of Enjoyment and Other Aesthetic Outcomes

There is a large body of research on how narrative absorption affects attitude change, especially in the domains of narrative persuasion and social cognition (see Appel et al., this volume). This chapter, however, focuses on evaluative outcomes of narrative absorption. Earlier research of this kind focused on straightforward evaluative outcomes, such as enjoyment (Kuijpers et al., 2014), pleasure (Nell, 1988), liking (Escalas, 2004), and escape (Green et al., 2004). More recently, however, a shift has taken place toward consideration of more meaningful and complex aesthetic outcomes (cf. Oliver & Bartsch, 2011, on appreciation; Oliver et al., 2017, on meaningfulness; Slater et al., 2014, on transcendence). The most recent of these endeavors is the development of the Absorption-like States Questionnaire and its validation through differential prediction of aesthetic outcomes (Kuiken & Douglas, 2017; 2018).

The expressive type of absorption on the ASQ is focally first-person and proximal (where objects in the narrative world seem close-to-hand), reliably predicts aesthetic outcomes (e. g., sublime disquietude as an interactive combination of feeling ill-at-ease, inexpressibility, and self-perceptual depth), whereas the integrative type of absorption, which is focally third-person and distal (where objects in the narrative world are at a distance and “over there”), reliably predicts explanatory outcomes (e. g., narrator intelligibility). Beyond sublime disquietude, there are other aesthetic outcomes related to the expressive path, such as sublime enthrallment (Kuiken & Douglas, 2017). In addition to these measures of the sublime, being moved (e. g., being moved to tears) is also

indicative of the expressive and not the integrative type of absorption (Kuiken & Douglas, 2018). Being moved, especially when conceived as an aesthetic emotion, is central to some conceptualizations of engaged literary reading (Meninghaus et al., 2018). In this work, being moved is a measure that is closely related to chills and goosebumps, indicative of an escalation of aesthetic response over a period of text reading that corresponds with increased aesthetic evaluation and appreciation.

Absorption and Well-being

Just as there has been a shift from talking about straightforward evaluative outcomes of absorption to ones that are deemed more distinctive, the emphasis on the potential harmful effects of absorption on well-being has shifted dramatically toward an understanding of absorption as beneficial rather than harmful to mental health. In the past, engaging in absorbed attention, specifically in absorbed reading, was seen as something dangerous and potentially harmful for a person's mental health. As Felski puts it "...the novel is the genre most frequently accused of casting a spell on its readers; like a dangerous drug, it lures them away from their everyday lives in search of heightened sensations and undiluted pleasures. Disoriented by the power of words, readers are no longer able to distinguish between reality and imagination; deprived of their reason, they act like mad persons and fools" (2008, p. 52–53). Usually, at this point, literary figures such as Don Quichotte or Madame Bovary are put forward as examples of such "mad persons and fools."

In recent years, however, the discussion of absorption's effect on mental well-being has been picked up again, and it has taken a different turn. On the one hand, some argue for harnessing absorbed reading to divert attention away from ailments readers are dealing with, such as chronic pain (Billington et al., 2016) or to help them overcome fear, guilt, or shame (Troscianko, 2018) (for an overview of the positive effects of reading on well-being, see Kuijpers, 2018). On the other hand, some have recently warned against the harmful effects of "over-indulgence" through binge watching, which, as Erickson et al. (2019) found, strengthens the intensity of narrative transportation (p. 1). Binge watching and the associated experience of getting drawn into a story world is often characterized as an addiction (Riddle et al., 2018), and here we can find an echo of earlier concerns about immersion turning people into "passive, uncritical human beings" (Brecht, 1964).

Directions for Future Research

Fine Tuning Conceptualizations and Operationalizations of Absorption

Current goals in absorption research include the examination of participatory responses (e.g., offering characters advice and action suggestions; Gerrig, 1993). Kuiken and Douglas (2017) have begun to coordinate such reactions with expressive and integrative absorption-like states. Douglas (2019) has also attempted to differentiate outcomes of absorption that includes participatory responses that are beneficial (e.g., narrating identity, self-perception change) from those that are potentially problematic (e.g., rumination).

Another effort to fine-tune not only conceptualizations, but also operationalizations of story world absorption, is the *Mining Goodreads* project undertaken by Rebora et al., (2018). In this project, the Story World Absorption Scale (SWAS; Kuijpers et al., 2014) is being validated against the unprompted expressions of real reader testimonies on the website *Goodreads*. Throughout the annotation work that is central to this project, it has been found that negative emotional engagement, participatory responses, and parasocial responses (Klimmt et al., 2006) form a large part of what makes readers feel absorbed, but these concepts are not reflected in the current version of the SWAS (or other current narrative absorption measures). The same can be said about concepts that have often been part of theoretical accounts of absorption, such as effortlessness and unwillingness to stop reading, but have been left out of empirical measures of absorption so far.

Absorption in the Age of Digitalization

Future research on narrative absorption should consider new (and constantly changing) forms of digital fiction enabled by technological developments. Digital fiction often presents multimodal content in a flexible narrative structure through various navigational interfaces (see Bell et al., 2013). New generations of fiction are, for example, told in a virtual reality environment (Naveska et al., 2017) or through social media (Thomas, 2016). One of the unique features of digital fiction is interactivity, which enables readers to make changes to the narrative path of the story and the fate of the characters (Green & Jenkins, 2014). These choices may increase readers' sense of agency and alter their sense of character engagement (Green & Jenkins, 2014). Although first steps have re-

cently been taken (Bell, et al., 2018), future research should further explore the nature of narrative absorption in readers' of digital fiction.

Unexplored Areas in Absorption Research

The ways in which we are currently investigating narrative absorption necessarily leave gaps in our knowledge about the nature of absorption and its effects. So far, the effects of (absorbed) literary reading have only been investigated using brief stimulus materials (i. e., short stories, poems, or fragments of novels), often selected or manipulated by the experimenter to isolate the effects of specific text features on specific outcomes (e. g., Cohen, 2001, on identification; Green & Brock, 2000, on narrative persuasion; Kidd & Castano, 2013, on theory of mind). Future research should look into reading long form narratives, such as complete novels. Because this is an undertaking difficult to realize in a lab setting, it seems reasonable to consider experience sampling methodologies (cf. Bolger & Laurenceau, 2013; Silvia & Nussbaum, 2011). Furthermore, absorbed reading has not been studied in daily life, which leaves a considerable gap, because absorption is an experience that is hard to simulate in a lab. Finally, experimenters have focused on short-term effects (i. e., how people feel immediately after reading a text) or made claims about long-term effects based on correlational analyses using self-report measures of “lifetime print exposure” (Mar et al., 2006; Panero et al., 2016). In sum, research on the long-term effects of absorbed literary reading in a natural context is greatly needed, and experience sampling might be the next step forward in absorption research.

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