Hybrid Documentary Formats:

How Narrative Elements in Archaeological Television Documentaries

Influence Processing, Experience, and Knowledge Acquisition

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For my parents.

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1. Introduction

In recent years, new hybrid television formats combining documentary and entertaining narrative contents and presentation styles have emerged, e.g., docu-dramas, docu-soaps, and documentaries with re-enactment scenes. Previous classical documentary formats mainly focused on informing the audience, e.g., about scientific contents, thereby fulfilling their educational mandate. It was assumed that the motivation of the recipients to watch a documentary depends mainly on their interest in the topic of the documentary as well as on reliable presentation of authentic contents. The new hybrid documentary forms want to entertain their viewers more in order to enhance interest and attract new target audiences. Therefore, entertaining narrative elements such as dramatization, emotionalization, personalization, and fictionalization are implemented into the documentaries – sometimes resulting in controversial discussions, as was the case with documentaries by the German journalist Guido Knopp (Kansteiner, 2003). Especially plausible fictionalizations are contentious in television documentaries from which the audience expects true facts. Because of this topicality and the incertitude about the consequences, it is worth examining these hybrid documentary formats psychologically with regard to their goals of bringing scientific contents closer to the viewers, making these contents understandable and leading to lasting knowledge acquisition.

The present work first introduces characteristics of classical and hybrid documentary formats, thereby identifying the narrative elements used in hybrid documentary formats: dramatization, emotionalization, personalization, and fictionalization (chapter 2). These narrative elements are then described in detail and considered with regard to their possible positive and negative influences on processing, experience, and knowledge acquisition with hybrid documentary formats (chapter 3). Because narrative elements in hybrid documentary formats suggest narrative processing and experience, subsequently, theoretical models of narrative comprehension and engagement are presented: the Model of Narrative

Comprehension and Engagement by Busselle and Bilandzic (2008) and the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002) (chapter 4). Afterwards, prior research on differences in processing expository and narrative material as well as the processing of the combination of both types of material are described, with a particular focus on the Capacity Model of Children's Comprehension of Educational Contents on Television by Fisch (2000) (chapter 5). Based on this prior research and theories, conclusions are drawn and hypotheses are formulated with regard to the processing, experience and knowledge acquisition with a particular hybrid documentary format: archaeological television documentaries with re-enactments (chapter 6). These hypotheses are then examined in two studies. The first study deals with the influence of visualizing fictionalization on narrative experience with archaeological television documentaries (chapter 7) and the second study examines the processing, experience, and knowledge acquisition with archaeological television documentaries (chapter 8). This is followed by a control study to support the results (chapter 9). The present work ends with a general discussion of the study results and their contribution to theoretical models as well as to the initial research question on how narrative elements in hybrid documentary formats influence reception processes, experience, and knowledge acquisition (chapter 10).

The theoretical enhancements and some results of the present work were already presented at scientific conferences or published in proceedings and scientific journals. The theoretical enhancements with regard to narrative elements in hybrid documentary formats were published in the special issue *Narrative Fact and Fiction: Pattern of Construction in Media Stories and Differential Effects* of *The European Journal of Communication Research* (Glaser, Garsoffky, & Schwan, 2009). An overview of the results of the first empirical study about the influence of fictionalizations in the form of re-enactments on narrative experience with archaeological television documentaries has been accepted for publication in the proceedings of the conference *Geschichtsjournalismus – zwischen Information und*

Inszenierung editied by the *Fachgruppe Kommunikationsgeschichte der Deutschen Gesellschaft für Publizistik- und Kommunikationswissenschaft* 2009 in Eichstätt (Glaser, Garsoffky, & Schwan, in press). The results of the first study were also presented at the 7th *International Conference of the Society for the Cognitive Study of the Moving Image* 2009 in Copenhagen and at the workshop *Narrative fact and fiction – patterns of narrative construction in media stories and differential effects* 2009 in Vienna, hosted by the *Institut für Publizistik- und Kommunikationswissenschaft Wien*, the *ECREA Section Audience and Reception Studies*, and the *Narrative Network*.

2. Classical and Hybrid Documentary Formats

Mass media play an important role in informal learning. This is particularly the case with television, because it reaches a broad range of potential learners who, incidentally or deliberately, acquire knowledge through watching a broad variety of programs. Recipients can learn true or false facts (Butler, Zaromb, Lyle, & Roediger III, 2009) from every kind of program, factual or fictional, documentary or entertaining. Documentary programs, in particular, have the overt intention to inform their recipients correctly, e.g., about scientific topics, and thereby to fulfill their educational mandate. This affects not only informal learning settings, but also formal learning contexts, because such television documentary programs (even with movie-like reconstructions; Paschen, 1994) are often used in the classroom setting as well, e.g., to make a connection between classroom science and the life of the students at home or to make science more interesting and vivid to the students.

Despite the fact that learning with documentary formats in formal and informal learning settings is such a common phenomenon and is explicitly created in order to communicate knowledge, hitherto, research has not sufficiently addressed this issue. While educational research has mostly dealt with instructional design in formal learning settings, and research on movies mostly with narrative fictional movies, research about the use of documentary programs for knowledge acquisition has been neglected.

In the meantime, dramatic changes have occurred within the documentary genre. Because of the broad variety of programs broadcasted on television, documentary programs have to compete with other, more entertaining programs for the attention and viewing motivation of the audience, especially the younger ones. This may be the main reason why hybrid documentary formats combining entertaining elements and documentary formats are increasingly emerging on screen.

Classical as well as hybrid documentary formats cover a wide range of topics, which can be classified into the following groups: documentary formats about history, contemporary

history, nature, animals, travel and culture, travel and nature, art and culture, science and technology, society (politically and socially controversial topics, non-political topics, human-touch, living environment) (Wolf, 2003).

With respect to presentation style, Wolf (2003) distinguishes between various classical and various hybrid documentary formats. Regarding to classical documentary formats, he describes four different types: feature stories, television documentaries, reportages, and documentary films. Feature stories were popular in the 70s. They are like thematical collages, visual essays or illustrated presentations rich in rhetorical variations, facts, arguments, and citations. They are regarded as being cautionary, smart-alec, verbose and dramaturgically bleak. Features are deductive-analytical, meaning that they want to make general conclusions, while television documentaries are synthetical-inductive, thus describing and questioning phenomena and clarifying developmental processes, thereby acting on the assumption of concrete theses.

Television documentaries have to be as objective as possible and are grounded on thorough inquiries, including interviews, audience surveys and investigations for relevant material in as many archives as possible. They can contain interview elements, visualizations in the form of graphics, experiments and demonstrations, and sometimes the author of the television documentary appears in front of the camera interviewing experts or speaking directly to the audience (Hickethier, 1993). An example of such television documentaries is *Energie 2050 – Aufbruch in ein neues Zeitalter* (Meczner, Giczy Hefner, & Giczy, 2009).

Reportages are not as objective as television documentaries, because they are based on authentical and singular observations of the reporter – the more personal, the better. They are often broadcasted on television within reportage magazines such as *ZDF.reporter* (since 2000) or *Focus TV Reportage* (since 2005), in which multiple other short reportages are also included.

The documentary film is the longest documentary format. Compared to 45-minute television documentaries, the documentary film lasts approximately 90 minutes. Documentary films are independent films, combining or opposing controversial points of view, thus creating and presenting a new world view to the audience. By presenting unfamiliar perspectives and interpretations of the world along with special forms of expression, the documentary film provokes the world view of the audience, but at the same time gives the pictures and the audience enough time to face this challenge. An example for such documentary films is *Capitalism: a Love Story* (in German: *Kapitalismus: eine Liebesgeschichte*) (Moore & Moore, 2009).

All these classical documentary formats are rather expository and argumentative in character (except, e.g., documentaries about biographies or historical developments, which are rather narrative). They describe and explain objects, causalities and circumstances which have their corresponding objects, causalities and circumstances in the present or past real life. They are often organized according to a hierarchical pattern of main ideas and supporting details or according to the chronology of events. They present information from an objective point of view and in an emotionally neutral way (except if the content is generically emotional). Classical documentary formats present authentic evidence (remains, text documents, footage, contemporary witnesses, etc.), from which sometimes assumptions are drawn. This gives the impression of authenticity to classical documentaries, which is also achieved by using specific presentation styles such as rather objective than subjective camera perspectives, or shots indicating an overt or covert observational distance instead of an involved closeness. But this impression of authenticity and objectivity is not really true, because documentary film makers already take on a subjective perspective in selecting special contents and disregarding others based on cultural circumstances, or institutional constraints of employers, practitioners and productional situations (Hickethier, 1993).

With regard to hybrid documentary formats, Wolf (2003) distinguishes between documentary series, docu-soaps, docu-dramas, and television documentaries with re-enactments, pseudo-documentaries (scripted reality), and fake-documentaries (mockumentaries). Documentary series are often about daily life topics, showing multiple persons and their lives edited in a patchwork-like cross-cutting. The single plots contain dramaturgical suspense curves, and each episode usually ends with a cliffhanger in order to tie the viewers to the program and to make them watch the next episode of the series (see also Hickethier, 1993). This documentary format balances documentary observations and dramaturgical structures of fictional soaps. Its serial aspect thereby refers to the fact that the contents of the single episodes are connected by narrative plotlines and not solely to the serial format. This distinguishes documentary series from other television documentaries which subsume narratively unconnected episodes under a general topic such as the German archaeological television documentaries from "Terra X" (Kammerich, de Moll, Müller, Neira, Specht, Thermann, & Thies, 1984). One example of a documentary series is the German series *Abnehmen in Essen* (Bringmann & Schröder, 1999).

Documentary series are called documentary soaps when their dramaturgy strongly resembles the structure of fictional television soaps and the character of soaps overbalances the documentary observations (and is hence perceived as more entertaining than documentary). Examples of the rather entertaining docu-soaps are the British *Driving School* (Joseph, 1997) and the German equivalent *Die Fahrschule* (Marx & Prehn, 1999). Unfortunately, docu-soaps with low aesthetic and dramaturgical quality have discredited this format in the past years.

Docu-dramas are characterized by their balance between documentary scenes and fictional restaging. Both forms are weighted equally. Neither do the documentary parts prove the re-enactment scenes nor do the re-enactments scenes illustrate the documents. This does not mean that both forms of scenes are equally long. The documentary and re-enactment

scenes can be merged or contrasted, depending on the preference of the author of the docu-drama. Furthermore, it is important to note that the contents of these re-enactment scenes are narrative. They represent actions and connected events, including dialogues like in a fictional movie. They are not mere scenic illustrations or visualizations like in many television documentaries with re-enactments. Examples of such docu-dramas are the German *Die Manns* (Gräfin Lambsdorff, Kleine, & Breloer, 2001), or *Todesspiel* (Lenze & Breloer, 1997), which is about the kidnapping of Hanns Martin Schleyer by the RAF. A British example of a docu-drama is *The Road to Guantanamo* (Winterbottom, Eaton, Parmenter, & Whitecross, 2006).

Television documentaries with re-enactments differ from classical documentaries in the way that authors of classical documentaries try to get along with existing documents and tell the most important things in the off-comments. At best, they try to illustrate the contents via editing. Television documentaries with re-enactments, on the other, hand try to visualize important information in order to provide pictures to the audience where no other visual material or only fragmentary remains and ruins are available like, e.g., in the field of archaeology or history. They are doing so by using re-enactments to different degrees. There are symbolic re-enactment scenes like the cognac glass on the mantelshelf indicating relaxed male atmosphere, silent re-enactments visualizing circumstances and actions, and, rather rarely, re-enactments constituting complete scenes with dialogue and a dramaturgical suspense structure. Re-enactments are also used because they refer to the viewing habits of the audience. The assumption that viewers expect suspense, aesthetics, and emotional attraction not only from the entertainment genre but also from the documentary genre is thereby accommodated for. Another reason to use re-enactments is to fill narrative gaps, because viewers are entertained only when the documentary doesn't leave them with uncertainties or open questions. Examples of television documentaries with re-enactments are

the German documentary series *Terra X* (Kammerich et al., 1984) or *Schliemanns Erben* (Graffe & Kafitz, 1996).

Pseudo-documentaries, also called scripted reality, are programs in which real or only plausible criminal cases or interpersonal conflicts are re-enacted. When based on real facts, photos from albums or police files are often the only documentary material. Some examples of this hybrid documentary format are *Das Strafgericht* (Dörper, 2002), *Lenßen & Partner* (Brock, Dörper, Weiß, Tobis, & Ender, 2003), and *Zwei bei Kallwass* (Marx, 2001). Strictly speaking, the pseudo-documentaries as well as the fake-documentaries, strictly speaking, do not belong to the documentary genre.

Fake-documentaries, also called mockumentaries, do not document existing objects, circumstances, or events, but are about fictional (future) issues. They use documentary presentation formats such as handheld cameras, reportage style, home videos, real and false news reports, or real and false experts. Fake-documentaries therefore look like reliable documentary formats presenting real facts. But the fictionality of the contents becomes apparent in some scenes, thus reminding the audience about the manipulative power of television. An example of fake-documentaries is *Opération lune* (in English *Dark side of the moon*, in German *Kubrick, Nixon und der Mann im Mond*) (Martin-Gousset & Karel, 2002) "documenting" that the moon landing of the Apollo 11 was faked by the US government with the help of Stanley Kubrick. Another example is the German mockumentary series *Stromberg* (Güde, Paetzold, Harms, Sonnemann, & Benthues, 2004), which is about a head of a department at an insurance company and his work. For an overview of the hybrid documentary formats just described, see Table 1.

Table 1: Hybrid documentary formats

Hybrid Documentary Format	Description
Documentary series	- often about daily life topics - shows multiples persons and their lives edited using cross-cutting - single plot containing dramaturgical suspense curves - each episode ends with a cliffhanger - balances documentary observation and dramaturgical structures of fictional soaps
Documentary soaps	- like documentaries series, but dramaturgy resembles strongly the structure of fictional television soaps → perceived as rather entertaining than documentary
Docu-dramas	- balances documentary scenes and fictional restaging - re-enactments are narrative and represent actions and events including dialogue like in fictional movies
Television documentaries with re-enactments	- like classical television documentaries, but also use re-enactments (symbolic, silent or with dialogue)
Pseudo-documentaries (scripted reality)	- re-enactment of real or only plausible criminal cases or interpersonal conflicts
Fake-documentaries (mockumentaries)	- about fictional (future) objects, circumstances and events - use documentary presentation styles → look like reliable documentary formats presenting real facts - fictionality becomes apparent in some scenes → reminds the audience about manipulative power of television

The makers of hybrid documentary formats want to tell stories. They want to attract their audience by providing suspenseful, aesthetic and emotional information which refers to their viewing habits. Hybrid documentary formats have a narrative and dramatic structure that causes suspense, surprise and curiosity instead of the hierarchical expository and argumentative patterns in emotionally neutral classical documentaries. In line with this dramaturgy, information is sometimes presented from subjective and restricted perspectives of particular persons in the story. Additionally, hybrid documentary formats do not only provide real documents as classical documentaries do, but add plausible, but fictional re-enactments in order to fill gaps in the narrative and its visual presentation.

It may be criticized that these classifications of classical and hybrid documentary formats are not very distinctive regarding the various classical and hybrid documentary programs on television. Not all documentary programs broadcasted on current television can

be easily assigned to one of the particular classical or hybrid formats described above, because they are only more or less typical. Another reason for the lack of distinctiveness of these classifications may be that they are not really theoretically driven classifications. They are rather practical discriminations of formats, developed by television makers considering program design issues. Nevertheless, these classifications seem to be sufficient for the purpose of the present work, and although it is difficult to discriminate within the two types of documentary formats, distinct differences between classical and hybrid documentary formats can well be identified on the basis of the above explanations: the entertaining narrative characteristics dramatization, emotionalization, personalization, and fictionalization.

3. Narrative Elements in Hybrid Documentary Formats and Possible Influences on Knowledge Acquisition

Up to now, no systematic classification or systematic research program about aspects discriminating hybrid from classical documentary formats or about aspects making hybrid documentary formats or narratives more narrative have been proposed. But using the above-mentioned narrative elements dramatization, emotionalization, personalization, and fictionalization, the present work picks up this problem and provides such a classification which is also suitable to analyze specific narrative effects on processing, experience and knowledge acquisition. Depending on the way and degree to which these narrative elements are used, the influences can be very different. The following chapters will describe these various forms of narrative elements and postulate a range of possible positive and negative influences on processing, experience, and knowledge acquisition. For an overview see Table 2.

3.1 Dramatization in Hybrid Documentary Formats

While classical expository documentary formats are often organized according to a hierarchical pattern of main ideas and supporting details, hybrid documentary formats using dramatization are mainly organized according to a pattern of events that follows the conventions of a story grammar (Taylor, 1982). Traditional story structure consists of a beginning, a middle and an end. More specifically, van Peer and Chatman (2001, p. 2) describe narratives as "typically start[ing] with imbalances that protagonists attempt to redress. Usually these attempts lead to complications, setbacks, crises, and ultimately to success or failure". These phases can be assigned to the trinomial structure as follows: Stories "set up an expectation at the beginning, this is elaborated or complicated in the middle, and is satisfied in the end" (Egan, 1986, p. 24, as cited in Norris, Guilbert, Smith, Hakimelahi, &

Table 2: Narrative elements and their influences on processing, experience, and knowledge acquisition with hybrid documentary formats

Narrative Element	Effects on Processing	Effects on experience	Effects on knowledge acquisition
Dramatization: addition of narrative anecdotes to expository presentation of educational content embedding educational facts into a narrative structure establishing a non-chronological and therefore less coherent discourse structure (within and between single programs)	selective encoding of different parts of the story (Cowen, 1988; Mandler, 1979; Mandler & Johnson, 1977; Negrete, 2003) suspense, curiosity, and surprise arouse interest and motivation for prolonged engagement; surprise is highly appreciated by the recipients (Hoeken & van Vliet, 2000)	may enable transportation and identification (Busselle & Bilandzic, 2008; Gerrig, 1993; Green & Brock, 2002) suspense, surprise, curiosity (Brewer & Lichtenstein, 1981)	surprise-preceding events are learned better because of reassigning these events after surprise (Hoeken & van Vliet, 2000) non-chronological discourse structure exacerbates memory for linearity of events (Cowen, 1988; Lowe & Durkin, 1999)
Emotionalization (valence, arousal) close-ups slow motion music cutting rate	openness and broad attention with positive (Fredrickson, 2004; Fredrickson & Branigan, 2005; Rowe et al., 2007) and narrow attention with negative emotions (Fredrickson & Branigan, 2005) more attention is focused on arousing material (Robinson, 1980; Spies, 1994) weapon focus effect (Kramer et al., 1990) attention focused on own emotions when arousal is too high (Jeismann, 2000) too high emotional arousal leads to heuristic processing via emotional appraisal	may enhance empathy and the narrative experiences of transportation and identification may lead to emotional overload and destroy transportation and identification when too emotional	better consolidation with higher arousal level (Spies, 1994)
Personalization implementation of agents telling the narrative out of a particular perspective use of supportive actors conversational style	interest and motivation for prolonged engagement via PSI and PSR (Hartmann et al., 2004; Horton & Wohl, 1956) more intense elaboration with agents using conversational presentation style (Mayer, 2005; Mayer et al., 2004; Moreno & Mayer, 2000, 2004; Töpper, 2009) enhanced interest in human touch rather than in educational contents	enables PSI and PSR (Hartmann et al., 2004; Horton & Wohl, 1956) enables identification (perspective taking and empathy) (Cohen, 2001, 2006) as well as transportation (Busselle & Bilandzic, 2008)	knowledge acquisition of subjective or restricted information
Fictionalization filling narrative gaps (scenarios) filling visual gaps (virtual reality reconstructions, re-enactments)	enhancement of processing fluency (Haberlandt & Graesser, 1985) facilitation of imagery resulting in reduction of cognitive load (Leutner et al., 2009) concreteness predicts interest (Sadoski et al., 2000) seductive detail effect (Garner et al., 1989; Harp & Maslich, 2005; Harp & Mayer, 1998)	by enhancing processing fluency, transportation and identification may be enhanced (Busselle & Bilandzic, 2008) concrete presentations may lead to higher transportation and identification (Cohen, 2001; Green & Brock, 2002)	dual coding leads to better consolidation of knowledge and comprehension (Brosius et al., 1996; Drew & Reese, 1984; Walma van der Molen & van der Voort, 2000) seamlessly integrated plausible details may be taken for valid leading to misconceptions

Phillips, 2005). This is a rather specific description of what a narrative is, but there are also other definitions. A minimal definition comprises "an event or a series of events" (Abbott, 2008, p. 13). With regard to hybrid documentary formats, a rather broad definition seems appropriate, because these formats often use only sparsely established instead of full-fledged narratives.

Narrative structures can be implemented into hybrid documentary formats by embedding the expository documentary facts into a narrative or by adding narrative anecdotes or explanations to the expository documentary presentation of information. Dramatization can be enhanced by restructuring a chronological sequence of events into a non-chronological sequence or by the formatting of television programs. Docu-soaps, for instance, use cliffhangers. Each episode ends with suspenseful scenes, leaving viewers uncertain about how the story continues. In this way, viewers' interest is maintained, which leads them to watch the following episode.

These forms of dramatization may have consequences for processing, experience, and knowledge acquisition of hybrid documentary formats. Assuming that expository and narrative material are processed differently (as will be shown in chapter 5 below), the implementation of narrative structure may allow, in addition to expository processing, to process hybrid documentary formats as narratives. This may elicit particular narrative experiences such as transportation and identification (described in chapter 4 below) and may have consequences for knowledge acquisition as well (Busselle & Bilandzic, 2008; Gerrig, 1993; Green & Brock, 2002). It may determine which facts are learned better than others, because research on story grammars has shown that readers or viewers selectively encode different parts of a story. Setting and beginning scenes, trials of the protagonists to resolve the problems, and outcomes are better remembered than other parts of a narrative (Mandler, 1979; Mandler & Johnson, 1977). Hence, important educational facts should be linked to the

relevant parts of the narrative. This is also supported by Negrete (2003), who concluded that

educational facts were more likely to be remembered when they were crucial to the

development of the story. The same result could be shown by Cowen (1988), who found that

central contents of a film were better comprehended than both peripheral and implicit

contents.

Restructuring a chronological sequence of events into a non-chronological sequence

opens up the possibility to tell the same course of events in completely different ways. Brewer

and Lichtenstein (1981) term the sequence of events as they originally happen in a story

world as *event structure* and the order of events which are presented to the viewer as

discourse structure. They also postulated that various discourse structures of the same event

structure, created by withholding specific information, cause different affective responses in

readers: suspense, surprise, and curiosity. The authors were able to confirm the postulated

effects of specific discourse structures on the experience of suspense and surprise and to show

that discourse structures which produced suspense and resolution, or surprise and resolution,

were judged to be true stories, whereas narratives that did not show these affective patterns

were not. Thus, Lichtenstein and Brewer's (1981) model suggests that the main purpose of

dramatizing a sequence of events, in terms of discourse structure, is to entertain the reader by

arousing certain affective states.

Establishing a non-chronological discourse structure and thereby causing emotional

experiences has consequences on knowledge acquisition as well. Hoeken and van Vliet

(2000) could show that a specific type of event order of a narrative influences knowledge

acquisition. Inclusion of a surprising event is highly appreciated and leads to better

representation of preceding story events, compared to a narrative without surprise. This better

memory for events preceding surprise was interpreted to be due to a reassignment of the

preceding events after the surprise was encountered, because reading times of these sentences were not different from reading times of the same sentences in the story without surprise.

Additionally, by establishing a non-chronological discourse structure, important information is deliberately withheld from the reader or viewer, and facts in the narrative are often implicit and not organized in a strictly logical and coherent way. Using flashbacks, for instance, reduces the coherence of the material presented, which may have negative consequences on memory and knowledge acquisition. Cowen (1988) was able to show that actions in a film are recalled better when the film is arranged in a linear compared to a non-linear order and that the linearity of events in a reconstructed story is also higher when based on linear than on non-linear montages. Lowe and Durkin (1999) examined children and found that sequencing central scenes of a film (but not comprehension) is better with a canonical version than with flashback or jumbled versions. McNamara, Kintsch, Songer, and Kintsch (1996) showed that while a reduction in coherence of expository scientific texts may enhance knowledge acquisition for readers with high background knowledge, readers with low prior knowledge require a coherent and explicit text with regard to various measures of learning outcomes. But this result may not hold for narrative and hybrid material, because prior research comparing narrative and expository material showed that the recall of facts of the narrative is independent of prior knowledge (Wolfe & Mienko, 2005). Thus, the results by McNamara et al. (1996) may not be valid for narrative and hybrid educational material.

In summary, dramatization of educational content may lead to different effects. Implementing a narrative structure leads to selective encoding of single educational facts and enables narrative experiences such as transportation and identification. The induction of surprise, curiosity or suspense through a non-chronological structure can enhance learners' appreciation, interest and motivation for prolonged engagement. Surprise further leads to better knowledge acquisition of the preceding events. But the non-chronological discourse

structure also leads to a less coherent and implicit presentation of educational facts and

impairs memory for linearity of events.

3.2 Emotionalization in Hybrid Documentary Formats

While classical expository documentary formats try to present information in a more

neutral and objective way (except if the content is generically emotional), hybrid documentary

formats often present information with additional emotionalization. There are two different

types of emotions: Emotions from *outside* the presented contents arise as the recipient

confronts a media presentation and experiences the pleasure of reading, watching or listening,

and the satisfaction of curiosity, surprise, or suspense, depending on the dramatic structure.

Emotions from *inside* the presented contents arise when the recipient enters the world of the

media presentation. These emotions include, e.g., sympathy, emotions of identification, and

memories of emotions from the recipients' own experiences triggered by the media content

(Oatley, 1994). Besides, emotions have two components: valence and arousal.

While emotions from outside the presented contents, such as suspense, curiosity and

surprise, are mainly caused by dramatization in hybrid documentary formats, emotions arising

through the contents of hybrid documentary formats can be enhanced by different techniques

of emotionalization: close-ups of facial expressions, slow motion, music, and cutting rate.

This may have several consequences for the processing of and experience and knowledge

acquisition with hybrid documentary formats.

Close-ups of facial expressions of characters, slow motion and music allow the viewers

to recognize the valence of emotions of characters faster and in a more detailed way than

would be possible in reality. Guido Knopp, known in Germany for his highly contentious

documentaries, uses these techniques by presenting victims of National Socialism who cry in

front of the camera, filmed in a close-up shot, and additionally highlights these pictures with

emotional music. In this way, the emotions of the protagonists can be made clearer so that the viewers may more fluently process and more easily understand and re-experience the feelings of the protagonists (despite some negative effects, which will be discussed below). This may further contribute to feelings of empathy and the narrative experience of transportation and identification (assuming that the hybrid documentary is processed like a narrative) (Busselle & Bilandzic, 2008; Gerrig, 1993; Green & Brock, 2002).

Emotions from inside the content (Oatley, 1994) of hybrid documentary formats can be enhanced by manipulating the physiological arousal component of these emotions. In some television documentaries, rapid cuts like in action movies are used to produce viewer arousal. Sturm (1984) also addresses this issue and terms it "die fehlende Halbsekunde" (the missing half second). Such fast-paced pictures in action movies do not allow for the full elaboration of the presented contents, because there is simply not enough time to do so. This is absolutely appropriate for action movies in which special effects and stuntman scenes have to be covered, but is not self-evident in the (hybrid) documentary genre. In this genre the maintenance of a medium arousal level appears to be indicated in order to avoid, on the one hand, emotional and cognitive overload and, on the other hand, boredom. This can be achieved through an optimal fit between scene duration and scene complexity. The more complex the content of a scene and the shorter it is, the higher the arousal. Contrary to that, if the scene is longer than is necessary for comprehension, arousal level, after an initial increase, will naturally decline to a minimum and result in boredom (Hochberg & Brooks, 1978, 2007).

When not paying attention to keeping a medium arousal level and instead exaggerating emotionalization, negative effects may occur. Documentary formats in which emotional content is additionally emotionalized by music or fast-paced pictures, are very problematic, because viewers can become overloaded by these emotions and their attention may become

focused on their own emotional arousal with which they have to struggle then (Jeismann,

2000).

Emotionalization may not only lead to these experiential effects, but may also have

consequences for knowledge acquisition. With regard to emotional valence highlighted by

close-ups, slow motion, and music, positive and negative emotions have different effects.

Positive emotions lead recipients to become more open to new experiences and more willing

to approach and explore novel objects, people, thoughts, and behavior by broadening their

breadth of attention (Fredrickson, 2004; Fredrickson & Branigan, 2005; Rowe, Hirsh &

Anderson, 2007). In contrast, negative emotions narrow the thought-action repertoire of

persons by directing their attention on specific actions or stimuli (Fredrickson & Branigan,

2005). Hence, for science education, positive and negative emotions should be used

depending on whether a broader or narrower focus of attention on the learning material is

intended.

Moreover, emotional arousal levels determined by close-ups, slow motion, music, or

cutting rate, seem to enhance knowledge acquisition independent of (positive or negative)

emotional quality. Spies (1994) showed that advertising films were better retained when they

had high emotional content, compared to advertising films with low emotional content. She

discussed two explanations for this result, which do not necessarily exclude each other. One

explains these effects on a physiological level and the other on a cognitive level. The

activation hypothesis assumes that high emotional arousal leads to a stronger activation of

neural connections and therefore to a stronger consolidation of learning contents. The second

explanation postulates that more attention is focussed on arousing material, which is therefore

better encoded, better elaborated, better connected with prior knowledge and better retrievable

than neutral material (see also Robinson, 1980).

In addition, the source of emotional arousal determines to which specific aspects attention is dedicated. Kramer, Buckhout, and Eugenio (1990) showed that attention is mainly focused on elements causing emotional arousal, thereby leading to a neglect of other details. They were able to show that eye-witnesses of a crime scene recall significantly less feature information, e.g., the face of the perpetrator, when his or her weapon was highly visible, compared to when the weapon was mostly hidden from view. This weapon focus effect leads to the implication that learning contents should be directly combined with emotional, surprising, or other important aspects within the story in order to achieve high attention and therefore better knowledge acquisition.

Despite these rather positive effects, there is also a danger with enhancement of emotional arousal, since too much of it can have contrary effects. Viewers may become overloaded by these emotions and their attention becomes focused on their own emotional arousal (Jeismann, 2000). They have to struggle with their emotions, which inhibits thorough elaboration of information and reflexive thinking and leads to a rather heuristic processing via emotional appraisal. Furthermore, positive narrative experiences like transportation and identification may also be inhibited when recipients find the contents overly arousing or noxious in some way (Busselle & Bildandzic, 2008).

In summary, emotionalization influences broadness and direction of attentional processes, and this could be used in hybrid documentary formats to guide the knowledge acquisition of the viewers. Additionally, acquired knowledge is consolidated better, and narrative experiences like transportation and identification can be enhanced. But on the other hand, too much emotional arousal can lead to heuristic processing and emotional appraisal, or even to an emotional overload, resulting in the distraction of attention and the inhibition of transportation and identification. Therefore, emotionalization in hybrid documentary formats should be used carefully and depending on the inherent emotionality of the contents.

3.3 Personalization in Hybrid Documentary Formats

Classical documentary formats about scientific contents mostly deal with objects, circumstances, and causal mechanisms, but rarely with persons. Classical documentary formats like documentaries about biographies of famous persons or historical developments and hybrid documentary formats embedding documentary facts into a narrative, on the other hand, comprise the implementation of agents. These narratives and agents are personalized by various methods in hybrid documentary formats: telling the narrative from a particular perspective, using supporting actors, and using conversational style.

By implementing narrative structure and therefore characters into hybrid documentary formats, the narrative experiences of transportation and identification with the protagonist or other characters may become possible. Personalization may provide a particular perspective of a person into which the recipients can then be transported and with which they can identify (Busselle & Bilandzic, 2008). Identification thereby consists of two components: perspective taking (cognitive component) and empathy (affective component) (Cohen, 2006). During identification, the goals and feelings of the protagonist are partly adopted as one's own goals and feelings. This may enhance interestingness and importance of this person and the content of the story.

Documentary formats can be personalized, e.g., by telling the narrative from the subjective perspective of a particular person or group, thereby enabling the recipients to take this subjective perspective to better understand their goals, subjective motives, and feelings. By choosing a particular perspective from which the documentary contents are presented, the documentary can be selectively adapted to the target audience it wants to address. Adolescents, for instance, may find historical topics more interesting and appealing when history is presented from the perspective of an adolescent person as well. Providing a particular view on documentary contents by using a specific protagonist in hybrid

documentary formats makes presentations rather subjective. This contrasts with classical

documentary formats, which try to explain issues from a neutral and objective perspective and

from a third-person point of view. Neutral and objective perspectives are abandoned in the

first case in favor of a personally appealing view that enhances interest.

Depending on the character that is chosen as the protagonist of the story, different

aspects of a scientific documentary content can be highlighted. Pharmacological research with

animal experiments, for instance, can be presented from the perspective of an ill person who

depends on such research in order to obtain helpful pharmaceuticals, or from the perspective

of animal rights activists condemning such procedures. The first perspective explains the

chemical mechanisms, the benefits of advanced technologies and the way in which they can

produce new pharmaceuticals. The second perspective highlights the dangers and

consequences for animals. In this way, different views on scientific topics can be presented.

Another method to personalize documentaries is the use of *supporting actors*.

Supporting actors are fictitious persons guiding the viewers through the documentary contents

by telling the narrative from their fictional perspective like in the German documentary series

Die Germanen (Feyerabend & Kersken, 2007). In the second episode of this series about

Arminius and the Battle of the Teutoburg Forest, for instance, the fictional character Notger is

implemented. He is a Germanic warrior protecting Arminius, with whom he has grown up,

against his enemies. Thus, he appears to be well able to tell the story from a perspective

similar to that of Arminius, misleadingly indicating that the viewers are provided with

authentic and unique material, and that the viewers are very close to the historical character

and the past events.

Through the implementation of conversational style, a further consequence of

personalization may be enhanced: parasocial interactions and parasocial relationships. The

illusion of face-to-face relationships with characters (Horton & Wohl, 1956) in documentaries

causes viewers to react to them in a similar way as to real social entities and can even lead to

an attachment to this character beyond a single "encounter", as can be observed with docu-

soaps. To support the development of parasocial interactions and relationships, the same cues

as in real social interactions can be used to make viewers feel addressed by documentary

characters. The intimate spatial distance to documentary characters created by close-ups, non-

verbal references (e.g., a demanding gaze into the camera) or verbal references (directly

speaking to the viewers) are such cues addressing viewers and forcing them to examine the

character more closely (Hartmann, Schramm, & Klimmt, 2004). In *Sesame Street*, for

instance, the characters directly address the young recipients by speaking into the camera and

talking to them using first- and second-person perspectives (using the pronouns *I* and *you*).

Personalization through the implementation of agents, particular perspectives,

supportive actors, or conversational style may not only have experiential effects as described

above, but may also have various influences on knowledge acquisition. By enabling

parasocial interactions and parasocial relationships, recipients' interest in the characters and

story contents can be maintained over a longer period of time, and therefore prolonged

engagement with the story content is granted.

Mayer (2005), in his personalization principle, further postulates, that recipients

elaborate information more intensely when the narration is presented in a conversational

rather than a formal style. Conversational style in this sense means to address viewers directly

and to speak using the first- and second-person perspective. This principle has been confirmed

in various studies. Moreno and Mayer (2000) varied personalization of instructional messages

for a multimedia explanation of lightning (Experiments 1 and 2) and for an agent-based

computer game about environmental science (Experiments 3, 4, and 5). Results showed that

subjects with personalized instructions (first- and second-person point of view) produced

better problem-solving transfer performance across all experiments and better retention

performance on the computer game than subjects who had received neutral instructions (third-person point of view). Moreno and Mayer (2004) examined the personalization effect by manipulating the personalization of an agent in a multimedia educational game. When the agent used personalized speech, subjects performed better on retention and problem-solving transfer tests than subjects exposed to agents without personalized speech. Mayer, Fennell, Farmer, and Campbell (2004) compared personalized and non-personalized versions of a narrated animation explaining how the human respiratory system works in three experiments and found that subjects who had received the personalized version scored higher on transfer tests than did subjects who had received the non-personalized version.

Machill, Köhler, and Waldhauser (2007) examined the implementation of a dramatic structure (dramatization) and protagonists (personalization) in one of nine (already narrative) news items of the German television news program *Tagesschau.* They were able to show that cued recall of news details (retentions), cued recall of causes and consequences, and drawing of conclusions (comprehension) improved when these additional narrative elements were used in television news programs. These results indicate that a sensible enhancement of narrativity through dramatization and personalization can help make television news, and maybe also documentary formats, easier to remember and understand.

Töpper (2009) also showed influences of personalization on knowledge acquisition. He examined the influence of personalized films on knowledge acquisition in museums and showed that visitors of a medical-historic exhibition learned more about exhibition objects and topics when they watched a personalized video with direct speech. In these videos, persons concerned spoke about their lives with a prothesis. Visitors who had watched a non-personalized video with the same information learned less.

But besides these positive effects of personalization, there are also negative effects: Personalization means to present information from a restricted or even subjective perspective.

This may lead to less differentiated knowledge and an enhanced interest in the human touch instead of interest in the educational contents.

In summary, personalization in hybrid documentary formats can enhance transportation, identification, general interest in the content as well as elaboration. But this may occur to the disadvantage of specific other contents because of the restricted perspective and enhanced interest in human touch.

3.4 Fictionalization in Hybrid Documentary Formats

Whereas classical documentary formats are generally based on facts, hybrid documentary formats may include plausible fictionalizations to different degrees as well. In producing documentaries, especially in the field of history and archaeology, the availability of audio and or visual documentary material is not necessarily a matter of course. Whereas for contemporary scientists and discoveries authentic footage can be used or produced, historical people, buildings, objects, or events have to be restaged or reconstructed. Examples of such hybrid documentary formats using fictionalization are archaeological television documentaries that include re-enactments or virtual reality reconstructions. Because historical records are often fragmentary, plausible (and therefore in a way fictional) elements have to be added in order to provide viewers with a seemingly complete and coherent narrative of the historical course of events or in order to provide visual material so that the viewers can better imagine the past periods. This can be achieved by either establishing detailed narrative scenarios as explanations for unknown historical (courses of) events or by using virtual reality reconstruction or re-enactments to provide visual material. This may lead to one or various plausible narrative explanations and visualizations of historical facts.

Plausible and detailed scenarios as explanations for unknown historical events are often used to make the narrative about the historical events more coherent. This is important

because incoherent narratives leave the recipients with an uncomfortable feeling which, in turn, may frustrate the viewers and reduce their motivation and interest, thus hindering further engagement with the educational contents. Plausible and detailed scenarios can be implemented into documentaries in different ways. The documentary can only present the most plausible of the possible explanations, or it can present various plausible scenarios and even discuss their development, advantages, and disadvantages. In this way, critical thinking and different perspectives may be fostered. The main difference between these plausible scenarios in hybrid documentary formats and assumptions about historical events in classical documentaries based on scientific facts is the entertaining, more narrative and detailed character of the scenarios in hybrid documentary formats. They want to tell an emotional story and thereby often combine these scenarios with detailed re-enactments or virtual reality reconstructions. But attention has to be paid that these scenarios are not too speculative because this may also reduce the credibility of the other contents of the documentary. One example of hybrid documentaries using such scenarios is the documentary series *Dinosaur Fight Club* (Groth, 2008), which uses detailed virtual reality reconstructions of dinosaurs as well.

Virtual reality reconstructions are often used to visualize historical buildings from which only ruins are left today. Based on these visualizations the recipients may also better draw inferences about other facts, e.g., warmth, acoustics, and atmosphere in the building. There are also different visual styles in which the reconstructed buildings are presented: They can be abstract or detailed, realistic or comic-like, transparent or opaque, gradually developing from the ruins or presented in a full-blown way. One example using such virtual reality reconstructions is *Qatna – Entdeckung in der Königsgruft* (Schillinger, Gutzeit, & von Kalkreuth, 2010) from the German series *Terra X*.

Re-enactments are staged plays in which the actors take the roles of ancient people in an environment and in attire which are designed to be historically correct. This also regards specific details such as hair cuts of former people and their clothes. In hybrid documentary formats, there are many forms of re-enactments, which vary on different dimensions like, for instance, amount of staging, type of speaking parts (without speech, in the original foreign language or in the language of documentary), kind of actors (professionals, amateurs or virtual agents) or narrativity (rather expository in the form of illustrations, or rather narrative telling a story visually). Nevertheless, all these different re-enactments have two things in common. First, the main characteristic of all re-enactments is their visualization. Re-enactments show things more concrete, picture social situations and events and are able to recreate a kind of atmosphere, which might have existed at that time. Another important characteristic of re-enactments is their entertaining character. Viewers know re-enactments mostly from historical movies, an entertainment format associated with leisure situations, viewing pleasure, and relaxation. Re-enactments therefore may arouse more interest in a proportion of the audience by attracting these viewers by their viewing habits (Wolf, 2003).

By filling gaps in the visual presentation (virtual reality reconstructions, re-enactments) as well as in the narration (scenarios), fictionalization also has influences on processing, experience, and knowledge acquisition. It confronts the viewer with a mixture of scientific facts and plausible (but ultimately fictional) additions, which may lead to a number of consequences. By providing congruent information in order to close narrative gaps and by providing visual images to close visual gaps, fluency and therefore the construction of the mental models as well as the narrative experiences of transportation and identification may be facilitated (Busselle & Bilandzic, 2008). This argument is supported by Leutner, Leopold, and Sumfleth (2009) who could show that constructing mental images while reading a science text reduces cognitive load and therefore increases comprehension and learning outcome. An

additional beneficial effect may be that with the help of congruent information and concrete visual images, scientific narratives may become more imaginable, concrete and vivid, which, in turn, may enhance the imagery-based experiences of transportation and identification (Cohen, 2001; Green & Brock, 2002).

Additional support comes from research dealing with the influence of concrete versus abstract words and concepts on the processing of narratives. Haberlandt and Graesser (1985), for instance, could show that concrete words evoking images are read faster than abstract words evoking no images. Sadoski, Goetz, and Rodriguez (2000) showed that concrete texts were recalled better than abstract texts. Concreteness in this study was the best predictor of overall comprehensibility, interest and recall. Fictionalizations that provide concrete pictures may therefore relieve viewers from having to imagine the scientific narratives on their own, which, in turn, should enhance knowledge acquisition. All this research supports the assumption that with mental images in mind, fluent processing is facilitated or, in other words, processing becomes less effortful.

Other research compared verbal presentation of information with presentations using additional visuals, and indicates advantageous effects of visualizations on knowledge acquisition. Drew and Reese (1984), for instance, found that recall among 10- to 16-year-olds was stronger when the story told was accompanied by visuals in film footage as opposed to being conveyed by "talking heads". Brosius, Donsbach, and Birk (1996) showed that pictures illustrating the text of television news reports enhanced free recall and cued recall of the content (compared to highly exchangeable standard pictures and divergent pictures). Research by Walma van der Molen and van der Voort (2000) on news stories compared television news with audio news and other forms of presentation and showed that children's recall of news is best in the television condition in which visuals were used additionally to the audio track. All

this research is also in line with Fisch (2004), who recommended the use of concrete and

dynamic visuals in educational television.

But visual fictionalizations do not only yield beneficial effects. Fictional additions that

are seamlessly integrated into the presentation (and which are therefore difficult to distinguish

from facts) may encourage viewers to take them at face value which, in turn, may lead to

misconceptions that are incorporated into the respective knowledge structures.

Additionally, the inclusion of fictional details may distract learners from relevant points

or prime inappropriate schemas around which recipients organize the material. This *seductive*

detail effect has been examined by various authors who found that text passages including

seductive details resulted in worse recall (Garner, Gillingham, & White, 1989) and problem-

solving test performance (Harp & Mayer, 1998) compared to subjects reading the same

material without seductive details. The same results were found for lectures (Harp & Maslich,

2005). But there is only a thin line which distinguishes seductive details from helpful

additions and illustrations that may enhance imagery, transportation, identification, and

knowledge acquisition.

In summary, fictionalizations facilitate imagery and the fluent construction of mental

models and therefore enhance the narrative experiences of transportation and identification.

Furthermore, concrete plausible visualizations enhance interest and lead to better

comprehension of acquired knowledge. Seductive details, on the other hand, have negative

effects on knowledge acquisition by distracting learners from the relevant points to be

learned, and seamlessly integrated plausible details may be taken at face value, leading to

misconceptions in knowledge structures.

4. Models of Narrative Comprehension and Engagement

The narrative elements in hybrid documentary formats described above may enable and facilitate a processing style which is similar to the processing of narratives. Dramatization, for instance, means to implement a narrative structure, which may lead to narrative processing and experiences for particular scenes or even for the whole documentary. Emotionalization, personalization, and fictionalization may further enhance the narrativity of this implemented structure and thus facilitate narrative processing and experience. To understand such narrative processing, which may additionally occur in hybrid documentary formats, models of narrative comprehension and engagement have to be considered. This is done in the following two chapters.

4. 1 The Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008)

In their Model of Narrative Comprehension and Engagement (see Figure 1), Busselle and Bilandzic (2008) postulate that during comprehension of narratives different types of mental models representing the narrative are created. The primary model is the situation model as described in the Event-Indexing Model by Zwaan, Langston, and Graesser (1995), which tracks events and actions of the characters as well as spatial and chronological cues. Busselle and Bilandzic (2008) add two conceptually separate mental models that interact with and are subordinated to the situation model. These two models are representations of the story world (story world model) and of the characters who inhabit this world (character model), both being relatively static models compared to the constantly changing situation model.

The story world model contains information about place, time and the general current state of affair. The story world logic is part of the story world model and refers to implicit constraints and rules that indicate what is possible in the story world and what is not. It starts with a default mode assuming that the story world logic is in accordance with the constraints that

rule the real world. Recipients are often not aware of the story world logic, but recognize it when it is violated.

The character model contains characters' identities and traits as well as their motivation and goals. These may be established when recipients infer traits based on the characters' behaviors through the course of events. Character identities and traits remain relatively stable as the situation model moves forward or the story progresses, respectively, while characters' relationships to their own goals and to other characters evolve with the progression of the situation model. The situation model can be regarded as a vehicle through which characters interact and experience events within a given story setting.
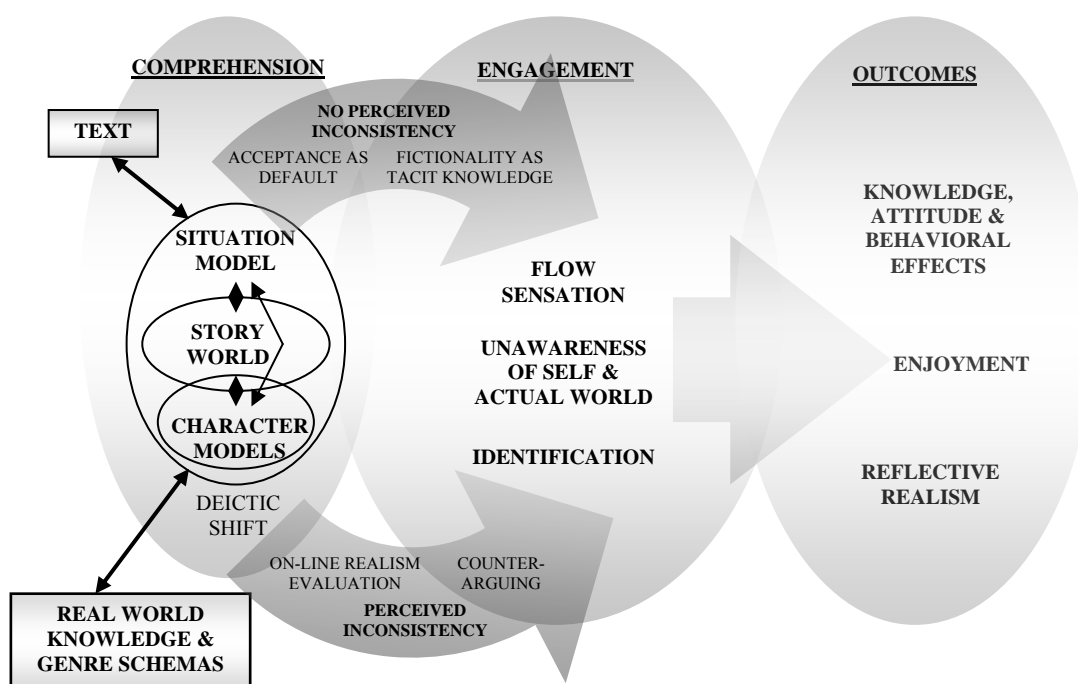
Figure 1: Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008)

Busselle and Bilandzic (2008), referring to the Model of Cognitive Processing of Films by Ohler (1994), also postulate that recipients use pre-existing knowledge structures such as real world knowledge and narrative knowledge (e.g., genre schemata) to generate consistent mental models.

Moreover, Busselle and Bilandzic (2008) infer from prior empirical research that the information whether a narrative is factual or fictional is part of the situation model (e.g., Gerrig & Prentice, 1991; Prentice & Gerrig, 1999). While processing the narrative, the other elements (e.g., events, actions, spatial cues and chronological cues) of the situation model become stronger because they are activated during reception, but the link to the concept of fictionality is not activated and therefore becomes weaker. This fictionality as tacit knowledge is tantamount to the acceptance of the narrative world as default mode.

Fictionality as an element of the situation model is functional for the narrative experience in that it alerts the recipients that narrative events may not be plausible with regard to the previous events, the story world logic, or the actual world. It is activated by inconsistencies within the narrative and by inconsistencies between the narrative and prior knowledge structures that can not be explained by the narrative: violations of narrative realism occur when incoming information from the narrative is inconsistent with what is already represented in the situation model, the story world model, and the character model. This hinders the smooth construction of consistent mental models, leading to critical evaluations of narrative realism and counterarguing. Perceiving that the content of a narrative is not consistent with general world knowledge or narrative knowledge also disturbs the smooth construction of the situation model and therefore the experience of engagement in the narrative and leads to an evaluation of external realism. Whether a lack of consistency with the real world knowledge leads to an impairment of narrative processing depends in part on how much this deviation from the real world is explained by the narrative. When the flow of processing the narrative is disturbed by either of these inconsistencies, recipients are likely to disengage at least momentarily from the narrative and the experiences associated with these processes as well as the consequences of the reception, such as knowledge acquisition, influence on attitudes, behavioral effects, enjoyment, and reflective realism, may be hindered.

While previous theories on the construction of mental models and the comprehension of narratives, like the Event-Indexing Model (Zwaan et al., 1995) or the Model of Cognitive Processing of Films (Ohler, 1994), mainly focused on how recipients cognitively construct meaning and make sense of a narrative, they neglected the phenomenological experiences accompanying these processes. The Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008) additionally addresses these experiential processes.

The most engaging experience in reading, hearing or watching narratives is the experience of being transported into and absorbed by the narrative world (described in the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002) below). When being transported, recipients mentally travel into the narrative world, lose track of time, temporarily forget the real world around them and then feel and think in the narrative world. Gerrig (1993) describes this process of transportation with his famous metaphor of a traveler who travels into the narrative world and comes back into the real world somehow changed. Green and Brock (2002) compared this process of transportation to the activity-related concept of flow proposed by Csikszentmihalyi (1990) – the experience of total absorption in an activity facilitated by a balance between an individual's ability and the challenge of the task. Hence, Busselle and Bilandzic (2008) postulate that transportation is the extent to which a recipient becomes absorbed in the activity of constructing mental models of the narrative and therefore relate the phenomenological experiential process of transportation to the cognitive processes occurring during the comprehension of the narrative.

The experience of psychological relocation into the narrative world (which may be a precondition of transportation) is also addressed in the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008), thereby referring on the deictic shift theory (Duchan, Bruder, & Hewitt, 1995; Segal, 1995). To feel present in the narrative world or in the generated situation model, respectively, recipients have to locate themselves in the narrative by shifting the center of their experience from the actual world to the story world. Recipients are motivated to

perform this deictic shift because deictic cues, such as the adverbs *here*, *now* and *today* in a text or direct speech, or nonverbal deictic markers, like pointing at something or looking in someone's direction in film, make sense only from the deictic center of the story – the here and now of a narrative person. Recipients perceive the narrative from a perspective inside the story world. Thereby, they experience the events in the narrative with the bias of the perspective the author or filmmaker predefines by the formal features of the narrative. Based on these considerations, Busselle and Bilandzic (2008) further render their definition of transportation more precisely to be "a flow experience in constructing the mental models of a story that is accompanied by the positioning of oneself in the story world" (Busselle & Bilandzic, 2008, p. 263).

Deictic shift is an important condition not only for transportation, but also for identification – "a [rather unconscious and imaginative] process that consists of increasing loss of self-awareness and its temporary replacement with heightened emotional and cognitive connections with a character" (Cohen, 2001, p. 251). During identification, recipients adopt a character's goals as their own, comprehend plot events with reference to these goals, and experience feelings that result from the interaction of these goals with the events taking place. Identification is therefore an emotional and cognitive process or an altered state of awareness in which understanding of and empathy for the character occur from the position of the character (Cohen, 2001). Identification is stronger and more likely when the character (or group of characters) is perceived as similar to oneself. Maccoby and Wilson (1957), for instance, examined identification of seventh-grade students with two characters of an episode of a serial movie. One of the characters was an upper-middle-class boy and the other was a lower-class boy. Results showed that upper-middle-class male students chose the upper-middle-class boy in the movie as an identificand whereas the lower-class male students chose the lower-class character. Girls preferred neither of these male characters for identification. Eyal and Rubin (2003) examined the degree to which university students perceive themselves to be similar to various

television characters with regard to beliefs, education, goals, social status and the like (homophily). They also assessed identification of the students with these characters. Furthermore, the students had to rate the aggressiveness of the characters as well as their own aggression. Results showed that viewer aggression significantly predicted identification with aggressive television characters and that homophily significantly predicted identification with the television characters.

The model proposed by Busselle and Bilandzic (2008) makes a substantial contribution to the understanding of narrative processing. Thereby, it goes beyond the mere combination of existing theoretical approaches. It differentiates more precisely between different mental models subsumed under the situation model and it relates the generation of mental models of the narrative to narrative experiences, thereby re-defining the concept of transportation. Additionally, this model postulates a common cause of transportation, identification and knowledge acquisition: the fluent construction of the mental model.

On the other hand, it is debatable whether the subdivision of the situation model into three distinct mental models is really necessary and whether the subordinated mental models can be validated by empirical data. It is not sufficiently validated either whether the fluent construction of the mental models of the narrative actually leads to better transportation and identification with the narrative characters. In addition, the assumption that the fluent construction of the mental models also leads to knowledge acquisition indicates that higher transportation is accompanied by better knowledge acquisition. This is an assumption based on theoretical considerations which remains to be confirmed empirically. Furthermore, there is research which indicates that this assumption is not self-evident: As reported in chapter 3, processing narratives and thereby creating mental models of the narrative leads to a bias in knowledge acquisition. Particular parts of the narrative are better remembered than other parts (Mandler, 1979; Mandler & Johnson, 1977; Negrete, 2003), i.e., transportation seems to go along with better knowledge acquisition only for particular facts. During the experience of

transportation, recipients are less critical, too, (as is described in the following chapter); hence, reflective thinking about the facts in the narrative seems to be inhibited. Both issues mentioned – better knowledge acquisition of particular facts and less critical reception – are not necessarily in line with one's understanding of better knowledge acquisition. Besides, the assumption that transportation goes along with better knowledge acquisition may actually hold for pure narratives, but not necessarily for hybrid media formats in which different types of processing may occur (see chapter 5). All this has to be considered with respect to the present work as well.

4.2 The Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002)

To understand the process of transportation more precisely, an additional model, the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002) has to be considered. According to Gerrig (1993) and in line with Busselle and Bilandzic (2008), narration is the precondition for transportation. Narratives serve to transport recipients away from their current realities, independent of whether the medium is text or film. This could be shown in a study by Green, Kass, Carrey, Herzig, Feeney, and Sabini (2008) who found that there was no difference in transportation levels between subjects who read a narrative and subjects who watched a movie about the same narrative. However, transportation levels during second-time reception were higher when subjects first read and then watched the narrative, compared to when subjects first watched and then read the narrative.

Transportation also occurs independent of whether the narration is factual or fictional; it simply has to be plausible. This could be shown by Green and Brock (2000) who found in four experiments that there were no differences in transportation, corresponding beliefs and character evaluations between subjects who read a narrative labeled as fact compared to subjects who read the same narrative labeled as fiction.

The process of transportation is subjectively experienced as being effortless. But this is only an illusion, because the experience of transportation actually occurs during an active

process, as is described in the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008). The narrative has to be actively processed and mentally represented to become transported. Based on their findings, Vaughn, Petkova, Trudeau, Hesse, McCaffrey, Candeloro and Smith (2007, cited in Green & Donahue, 2009) suggest that feelings of processing fluency or subjective ease may increase transportation as long as individuals attribute those feelings to the narrative; however, the influence of processing fluency still has to be examined more closely.

Within the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002), transportation is defined as "a convergent process where all mental systems and capacities become focused on events occurring in the narrative" (Green & Brock, 2000, p. 701). This model postulates three aspects of transportation: a cognitive component (attention), an imaginative component (imagery), and an emotional component (feelings). All three of these components are focused on the narrative when recipients are transported. The recipients fully focus their mental resources on the processing of the narrative. With regard to the cognitive component, Garsoffky, Glaser, and Schwan (submitted) were able to show that dedicating high amounts of attention to the narrative leads to higher levels of transportation than dedicating low amounts of attention. The emotional component of transportation means that recipients are fully emotionally engaged in the narrative during reception. This emotional engagement manifests itself in participatory responses such as hopes and preferences, (anomalous) suspense, and (anomalous) replotting (Gerrig, 1993). During transportation, recipients also imagine the events that unfold in the narrative. Written and spoken narratives thereby provide less visual cues than movies, which could be used for imaginative processes. With books or spoken narratives, the recipients have to generate mental images on their own according to the description in the written or spoken text, while audiovisual media provide ready-made images. Nevertheless, imagery plays an important role during film viewing as well. The pictures presented have to be

connected to the mental model created by the viewers. In this way, visual images provided by the medium could contribute to a fluent processing of a narrative.

This imagery component was not explicitly included in Gerrig's (1993) conceptualization of transportation, but is given an outstanding role in the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002). In this model, Green and Brock (2002) postulate that narrative persuasion in the form of belief change occurs to the extent, other things being equal, that evoked images of the narrative are activated by transportation. Images evoked by a narrative take on meaning from their role in a story, and the richer mental images can be formed, the more persuasive the narrative. The transportation process links the vivid images with beliefs implied by the narrative. Over time, recalling the image may re-evoke large parts of the original communication, thus reinforcing story-relevant beliefs (Green, 2008). This could be confirmed by an advertising study by Escalas (2004). He was able to show that subjects who imagined themselves wearing a pair of sports shoes were transported and thus showed reduced critical thinking and a more positive attitude toward the advertisement and the product. The relationship between transportation and imagery could also be confirmed by an experimental study by Nell (1988) who found a positive moderate correlation between imagery during reading and reading involvement, a concept similar to transportation.

Additionally, transportation seems to be affected by attributes of the "text" (e.g., artistic craftsmanship and the extent of adherence to the narrative format), by attributes of the context or medium (such as aspects limiting the opportunity for imaginative investment and emotional engagement) and by attributes of the recipient (such as imagery skill, trait absorption, prior involvement in the narrative topic, and prior knowledge). Especially with regard to books, transportation is assumed to derive its force mostly from recipients' general ability to create vivid images; therefore, imagery ability should produce some variance in transportation (Green & Brock, 2002). Although research (Sheehan, 1967; Sheehan & McConkey, 1982) suggests that even persons with low imagery propensity may experience images in response to an especially

vivid description in a narrative, persons with higher levels of imagery ability may experience more transportation if they actually use their ability.

Another important variable that may influence transportation is trait absorption (Green & Brock, 2002). Absorption is interpreted as a "disposition for having episodes of 'total' attention that fully engage one's representational (i.e., perceptual, enactive, imaginative, and ideational) resources" (Tellegen & Atkinson, 1974, p. 268). It is related to hypnotic susceptibility (Tellegen & Atkinson, 1974) and to synesthetic experiences (Ritz & Dahme, 1995) and is moderately correlated with transportation, as Green (as cited in Green & Brock, 2002) as well as Green and Brock (2000) reported.

Greater initial interest or motivation can lead to more cognitive and emotional engagement as well (Green, 2004; Tan, 1996). Thus, personal involvement with the contents of the narration may influence transportation. Involvement has been defined and operationalized in a very heterogeneous way in research literature, because various research traditions deal with this concept (e.g., social judgement theory, theories on persuasion, consumer research, and audience research). In the present work, the concept of involvement is understood as it is defined in consumer research by Zaichkowsky (1985). She defines involvement as "a person's perceived relevance of the object based on inherent needs, values, and interests." (Zaichkowsky, 1985, p. 342). High perceived relevance of an object or film topic may lead to increased cognitive and emotional engagement and, correspondingly, transportation.

Finally, prior familiarity with the narrative contents in form of personal experience or prior knowledge also enhances transportation. This could be shown in a study by Green (2004), who compared transportation levels of readers with high and low prior knowledge or experience with regard to homosexuality and fraternities after reading a text on these topics.

There are also consequences of transportation. As already mentioned above, while being transported, the recipients temporarily lose access to information from their real world situation in favor of accepting the narrative world. This temporary disconnection from reality occurs on a

physical as well as on a psychological level. Things going on around the recipients are not noticed by them and they perceive a gradual, ongoing departure from reality. Recipients also lose public self-awareness, meaning that they leave their worries and public self-consciousness behind when they enter the narrative world. Nevertheless, this temporary disconnection from the real self is not total. The recipients bring with them personal knowledge to the reception of the text or film. Thus, the narration is understood within the context of this individual prior knowledge.

Another consequence of transportation is that the recipients return from being transported somewhat changed. At a minimum, recipients are changed by having a memory of what they read, heard, or watched. But other changes are possible as well, such as belief changes in accordance with the beliefs addressed in the narrative. This could be confirmed by Green and Brock (2000), who showed that subjects who were more transported into a narrative showed greater belief change towards beliefs consistent with the narrative, more positive evaluations of the main protagonist, and less rejection of narrative content. Transportation may support belief change in different ways: Transportation reduces counterarguing about the issues raised in the narrative. This could be shown by Green and Brock (2000), who found that highly transported readers identified fewer "false notes" in a narrative compared to less transported readers. Transportation may also affect beliefs by encouraging memories – links between the narrative and the recipients own life – and make narrative events seem more like personal experiences and therefore more powerful (Green, 2004). Through vivid imagery and emotional involvement, transporting narratives approach direct experience more than other forms of persuasive messages.

Although the Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002) as well as Gerrig (1993) describe the narrative experience of transportation very well, there is still empirical difficulty to separately assess the three single components of transportation – attention, emotion, and imagery. Green and Brock (2000) developed a questionnaire to measure transportation, which also aimed at assessing the single components.

But because these components could not be validated empirically, the authors recommend to use the full scale and not to discriminate between the single components (Green & Brock, 2000). Another critical point is that the Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002) mainly deals with persuasive effects of transportation on attitudes and judgments, but not on knowledge acquisition. As was already mentioned in the previous chapter, there is still uncertainty about how transportation and knowledge acquisition are related; and the model by Green and Brock (2002) can not shed light on this issue either. Hence, the present work deals with this question.

5. Processing Expository and Narrative Material

Because hybrid documentary formats often use entertaining narrative elements and not fully elaborated narratives, it is doubtful whether these narrative elements exert the same powerful influences as full-fledged narratives, as was previously described in the models by Busselle and Bilandzic (2008) and Green and Brock (2002). Additionally, it is questionable whether degrees in narrativity are associated with degrees in narrative effectiveness (Norris et al., 2005). It is also unknown to which degree narrative processing occurs with hybrid documentary formats containing narrative elements; but it seems doubtful that only narrative processing occurs. Regarding the fact that hybrid documentary formats combine rather expository documentary with narrative entertaining material, it is conceivable that both types of processing – narrative and expository processing – can occur during the reception of hybrid documentary formats. But what are the differences between these two types of processing? How exactly are expository and narrative processing interrelated during the reception of hybrid media presentations? And which consequences does this have for experience and knowledge acquisition? Until now, mostly pure narrative and pure expository forms of media presentations have been examined, but the processing of the combination of narrative and expository elements in hybrid media formats has been largely neglected. To examine this issue more closely, first, prior research on the processing of expository and narrative material as opposed types of presentation has to be considered. Then, the only theory on the processing of hybrid media formats which is currently available has to be regarded: the Capacity Model of Children's Comprehension of Educational Contents on Television (Fisch, 2000). All this is done in the following two chapters.

5.1 Differences in Processing Expository and Narrative Material

Expository and narrative material is generally processed such that their main content is represented in form of a highly organized "mental model". But the concrete type of organization

largely depends on the structure of the material to be processed. In particular, for expository texts, propositional structures of the educational contents are extracted from the surface structure of a "text" and related to prior knowledge about the educational topics and to cognitive schemata (Johnson-Laird, 1983; Schnotz, 2005).

In the case of narratives, recipients also extract information out of the narrative material, but with regard to space, time, protagonist, causality, and intentionality. This leads to a mental representation of the story called the situation model (van Dijk & Kintsch, 1983; Zwaan et al., 1995). This model is continuously updated during the ongoing reception (Zwaan et al., 1995). Again, inferences are drawn with the help of prior knowledge about the general world, about narratives, and about schemata about media specific forms of presentation (Ohler, 1994), causing expectations about how the story will go on, filling gaps in the presentation and guiding attention. All this describes the basis of the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008) explained previously.

Additionally, there are several empirical studies dealing with the differences between expository and narrative material with respect to processing and knowledge acquisition. Graesser (1981), for instance, showed that narrative passages were read faster, comprehended better, and better retained in memory than expository passages and perhaps other rhetorical modes as well (e.g., argumentation or description). This is in line with Wolfe (2005), who was able to show that in a free-recall task, readers recalled significantly more text elements from nine narrative texts than from nine expository texts on different topics. Haberlandt and Graesser (1985), using 12 texts about different topics varying with regard to degree of narrativity, showed that reading times of texts decreased with increasing narrativity of the texts. Negrete (2003) compared narrative texts with expository lists of facts (presumably the same facts as in the narrative texts, but this is not clearly described) in the context of science education and could also show that narrative information was retained longer in long-term memory than expository information.

Furthermore, educational facts were more likely to be remembered when they were crucial to the development of the story.

This apparent advantage of contents embedded in narrative texts over contents in expository texts with respect to memory and knowledge acquisition has to be considered with caution. It is possible that difficulty of contents is confounded with preferred presentations style. Therefore, contents preferably presented in narratives may be easier to remember and understand than contents preferably presented in expository style. If this were the case, the advantage of contents embedded in narrative texts over contents in expository texts with respect to knowledge acquisition can not be ascribed to presentation type but rather to difficulty of content. In the present work, this confound will be averted, but regarding the single studies described above, no definite conclusion on this issue can yet be made.

Assuming that the advantage in memory and knowledge acquisition for narrative over expository texts is a matter of presentation style, the processing of both types of texts has to be inspected more closely. Zabrucky and Ratner (1992), for instance, showed that type of passage (eight expository vs. eight narrative passages, each on different topics and about 11 sentences long) affected regulation of understanding. Students were more likely to look back at inconsistencies in narrative, but not expository passages. Students were also more likely to reread expository passages, even when the passages did not contain problems, and they were less able to recall information from expository passages in a free recall test. These results indicate that although students frequently reread sentences in expository passages, they are less able to integrate expository propositions across sentences and form coherent memory representations for this type of text. This may have several reasons, such as the potential of the material to evoke personal experiences, the reception goals with which recipients approach the different media presentations, or the possibility to link incoming information to prior knowledge structures about the educational topic.

Seilman and Larsen (1989) compared a narrative literary text and an expository text (presumably about different topics; this is not clearly described in the original paper) with regard to eliciting memories of personal experiences. They could show that both texts elicited an equal amount of memories, but in the memories elicited by the literary text, the readers were more often actors than observers or receivers of information. In the memories elicited by the expository text, the readers were most often passive receivers. Indeed, it seems that narratives do have a greater potential than expository presentation forms to activate personal memories of events in which recipients actively participated and may therefore have a greater potential to tie educational contents to the learners' everyday life.

Narrative and expository material can be read or viewed with different reception goals as well. Some material, e.g., a fictional movie, is processed with the purpose of entertainment, and some material, e.g., television news or scientific textbooks, is processed to gain information and learn. Depending on these reception goals, different types of processing occur. Narvaez, van den Broek, and Ruiz (1999) showed that readers with a study purpose repeated a text more often, acknowledged more often a lack of background knowledge and evaluated text content and writing more often than did readers with an entertainment purpose. This pattern was stronger for expository texts compared to narrative texts (all about different topics). Reading purpose in this study had only influence on these online measures, but not on off-line measures such as comprehension.

This was the case, too, with a study by Salomon and Leigh (1984). They directly manipulated receptions goals for processing a narrative shown on television or written in text. Children either watched or read for fun or watched or read to see how much they could learn from it. The results showed no influence of reception goals on recall, but children actually invested more mental effort when they watched or read to learn, compared to children who watched or read for fun. Additionally, they found only a low positive correlation of $r = .18$

between amount of invested mental effort (AIME) and recall scores in the learning-instruction condition.

The preceding results indicate that, depending on whether recipients want to be entertained or informed, different types of processing occur – the latter more strongly involving AIME and prior knowledge structures about the educational topics and therefore being more likely to evaluate these prior knowledge structures with regard to their usefulness for processing incoming new contents. But whether AIME in processing information also leads to better knowledge acquisition seems to depend on the successful integration of new information with prior knowledge structures about the educational topics. Although investing high amount of mental effort with a learning purpose, this process may fail because of insufficiently established prior knowledge structures about the educational topics to which the new information can be tied to.

Wolfe and Mienko (2007) compared three texts about the human circulatory system with regard to knowledge acquisition considering further possible mediating influences of prior knowledge about this topic: one narrative text, one expository text presenting the information sequentially, and one expository text presenting the information structured by topic. They were able to show that knowledge improvement (learning, assessed with a short questionnaire before and after the treatment) and recall (free recall protocols) did not differ as a function of text genre overall, but depended on prior knowledge. With regard to learning with topical expository texts, no optimal amount of prior knowledge could be assessed. With narrative and sequential expository texts instead, different levels of prior knowledge appeared to be optimal for learning: Knowledge improvement with sequential expository texts was optimal for readers with a higher amount of prior knowledge, while for learning with narrative texts a lower amount of prior knowledge was appropriate. With regard to recall, results showed a positive relationship with prior knowledge for both expository texts, but recall was unrelated to prior knowledge for the narrative text. All these results indicate that narrative texts are processed with the concern to create a mental representation of the events being described in the narrative, but less with the

concern to integrate the educational contents into existing prior knowledge structures about the educational topic, while processing expository texts, on the other hand, seems to involve attempts to integrate the educational contents into prior knowledge structures. This interpretation of narrative and expository processing is also consistent with the tacit consent that narratives are rather for entertainment and expository text for information, as well as with the previously mentioned results by Narvaez et al. (1999), which showed that a lack of background knowledge was acknowledged more often by recipients with a study purpose than by recipients with an entertainment purpose.

Additionally, the question arises in how far these results match with other studies (e.g., Hambrick & Engle, 2002; Schneider, Körkel, & Weinert, 1989; Spilich, Vesonder, Chiesi, & Voss, 1979) that have indicated an advantage of prior knowledge for narrative texts, meaning that prior knowledge about the educational topic (here: prior knowledge about different sports) enhances (cued) recall with narrative texts. This apparent discrepancy may be due to differences in the extent to which the educational contents are tied to the narrative structure of the text. When educational contents constitute essential parts of the narrative, like in these studies or like in some hybrid media formats, prior knowledge about these educational contents may also be used to construct the mental model of the story and to understand the narrative, while with narratives in which the educational contents are distant to the narrative structure, such prior knowledge would be irrelevant to understanding of the story. This may be a reason why some studies found an advantage of prior knowledge for narrative texts and some did not. The closeness of educational contents to the narrative is especially addressed in the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000), which will be described below.

For all practical purposes, narrative texts may be more beneficial to recipients with low prior knowledge about the educational contents because the story provides at least some mental structure, namely, the narrative course of events to which they can connect the contents. The

disadvantage of this kind of presentation may be that educational contents are rather presented as mere details that relate to the central story rather than being the focus of the recipients' processing effort. Therefore, it is possible that educational contents fade more quickly from memory than contents that are integrated with prior knowledge during the processing of expository material.

With regard to understanding the processing, experience, and knowledge acquisition with hybrid documentary formats, the results of this research can be transferred to a limited extent only, because this research regarded narrative and expository material as mutually excluding forms of presentation and compared them in their pure forms instead of analyzing their combination. In this way, most of this research can only draw conclusions about the differences in memory and knowledge acquisition between purely expository and purely narrative texts, but not about differences in knowledge acquisition between hybrid media formats embedding educational facts into a narrative and purely expository presentations.

Another problem of this prior research comparing narrative and expository material is that it seems to be impossible to find specific narrative effects. Most of this research failed to control for passage content and difficulty, employed a great variety of methods and procedures, and finally, used various degrees of narrativity.

> "Comparing pure narrative and pure expository [texts] with the same content and difficulty while keeping all other text variables as well as reader, activity, and context variables controlled [...] would be virtually impossible to implement [... and] the finding of a narrative effect in this controlled situation could not be expected to hold in uncontrolled context where all the other text, reader, activity and context variables would immediately come into play" (Norris et al., 2005, p. 553).

Therefore, one can say that the confounding factors make it difficult to exclude any narrative effect of this research.

5.2 Processing the Combination of Expository and Narrative Formats: The Capacity Model

of Children's Comprehension of Educational Content on Television (Fisch, 2000)

Hybrid media formats combine expository educational material with narratives in different ways: Educational contents can be embedded into narratives, or narrative anecdotes can be attached to expository presentations of educational contents. While there is already some research comparing expository and narrative material with regard to processing, memory, and knowledge acquisition, as was described in the previous chapter, only few empirical studies have dealt with the combination of narratives and rather expository educational material in formal and informal education.

One prominent example which uses narratives in formal science education is the Jasper project by the Cognitive and Technology Group at Vanderbilt (1997), which embedded problem solving tasks of diverse areas (e.g. mathematics, history, and literature) into narratives that were presented on video. Hickey, Moore, and Pellegrino (2001), who implemented the Jasper material in schools, showed that classes using the Jasper materials were better at problem solving than classes that did not. Van Haneghan, Barron, Young, Williams, Vye, and Bransford (1992) also evaluated the Jasper project and showed that learners using the Jasper narratives were better able to discriminate between relevant and irrelevant information and to formulate the problem of another video-based problem-solving task than learners who did not study using these narratives.

An example of empirical research on hybrid media formats in informal science education can be found in research on educational television such as *Cro* (Richardson, 1993), a narrative animated series for children aged 6 to 11 about the adventures of a Cro-Magnon boy and a group of talking mammoths, designed to promote knowledge of and interest in technology (Fay, Teasley, Cheng, Bachman, & Schnakenberg, 1995, as cited in Fisch, 2004). Based on such research, one can conclude that interest and knowledge acquisition with hybrid media formats presenting educational contents in an entertaining and narrative way is possible as well.

Fisch (2004) deduces various characteristics of such educational television programs which contribute to the effective treatment of science and technology in educational television. Among other things, he identified the following points to be important: Media presentations should focus on concrete, visual phenomena or devices, as opposed to abstract principles; they should use unusual or action-filled rather than static visuals; and, finally, they should embed science contents in a dramatic narrative, thereby making educational content integral rather than tangential to the narrative plotline.

But besides these results and suggestions for the design of educational television, it is not yet clear how exactly hybrid media presentations are processed. A first theoretical approach to address this issue was made by Fisch (2000) in his Capacity Model of Children's Comprehension of Educational Content on Television. Thereby, he mainly refers to educational television programs like *Cro* (Richardson, 1993) or *Sesame Street* and focuses on the allocation of working memory resources. His model consists of three basic components: (i) the processing of the narrative, (ii) the processing of the educational content (usually presented in an expository style) and (iii) the degree to which the educational content is integral or tangential to the narrative (see Figure 2).
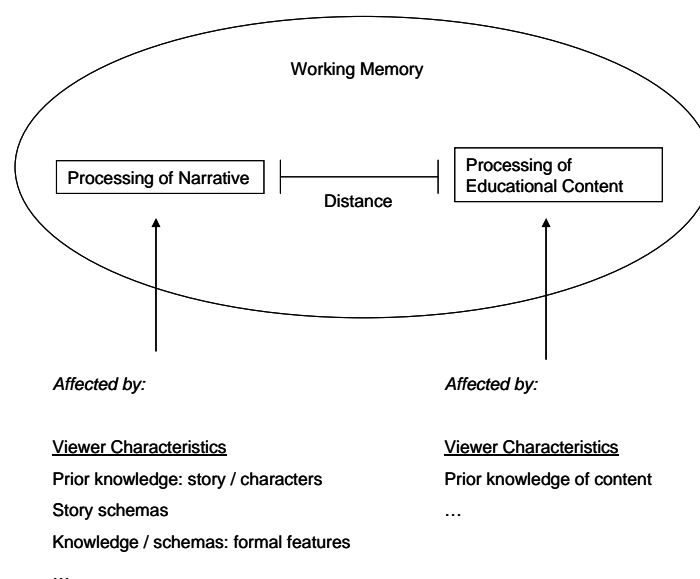
Figure 2: Extract from The Capacity Model of Children's Comprehension of Educational
        Content on Television (after Fisch, 2000)

Fisch (2000) assumes that narrative and educational content have to be processed simultaneously. Therefore, when the educational content is tangential to the central narrative of a television program, the two parallel processes of comprehension compete for the limited working memory resources. The model now proposes that narrative processing has priority over educational processing and that therefore, tangential educational content cannot be processed as deeply as it might otherwise be. Thus comprehension of the educational content is likely to be impaired although comprehension of the narrative may not. Otherwise, when the distance between narrative and educational content is small (meaning that the educational content is woven tightly into the narrative), then the two parallel processes are assumed to complement each other, and comprehension is likely to be strengthened.

Fisch (2000) additionally argues that in educational television programs where educational content is embedded in a narrative, the narrative comprises the surface content, whereas the educational content may lie more deeply within the program. When only limited working memory resources are available, it seems reasonable to expect that those resources would be devoted primarily to the surface content of the program rather than to the deeper educational content.

But on the other hand, if viewers are motivated to view a program for the purpose of learning, or if there is any other factor that makes the educational content more salient in the mind of the viewer, it is likely that a greater proportion of working memory resources is voluntarily allocated to the educational content. This is in line with the previously described research about the influence of reception goals on the processing of narrative and expository material (Narvaez et al., 1999; Salomon & Leigh, 1984) indicating different types of processing dependent on the reception goals, i.e., more strongly involving AIME and prior knowledge structures with a learning purpose than with an entertainment purpose. But up to now, the influence of reception goals has not been assessed empirically with hybrid media formats combining both types of material.

In his capacity model, Fisch (2000) also formulates five ways by which comprehension of educational content in hybrid television formats can be increased: First, by increasing the total amount of working memory resources dedicated to the television program as a whole, e.g., by enhancing interest in the program in general; second, by reducing the demands of processing the narrative such that more resources are available for processing educational contents; third, by reducing the demand of processing educational contents such that less cognitive resources are needed; fourth, by minimizing the distance between narrative and educational content in the program; and fifth, by viewers' voluntary allocation of a greater proportion of working memory resources to the processing of educational content, e.g., because of the motivation to learn.

Furthermore, some viewer and program characteristics are assumed to influence the processing of hybrid television formats. An important characteristic is prior knowledge. Depending on whether prior knowledge refers to the narrative (story and characters, story schemata, formal features) or to the educational contents, it reduces the demands of processing these contents, because they can then be assimilated more easily into these memory structures. This is in line with the previously described studies (Hambrick & Engle, 2002; Schneider et al., 1989; Spilich et al., 1979; Wolfe & Mienko, 2007), which indicate that prior knowledge about educational issues can also be used for processing the narrative when both narrative and educational contents are closely interrelated.

The Capacity Model of Children's Comprehension of Educational Contents on Television (Fisch, 2000) makes substantial contributions to the understanding of the processing of media presentations combining narrative and educational contents. It also describes how narratives have to be combined with educational contents to enhance comprehension. But on the other hand, the model proposed by Fisch (2000) does not allow conclusions about whether hybrid media presentations embedding educational facts into a narrative are better or worse with regard to knowledge acquisition than purely expository presentations of educational facts.

In large part, the model focuses on the resource allocation processes only. Notably, resource allocation is one of the four main processing steps in knowledge acquisition. First, motivation and interest are required as basic preconditions for learning. Second, cognitive resources have to be allocated to the learning material. This refers to attentional processes and to the limited resources of working memory. Third, learning contents must be elaborated in working memory. This includes generating inferences by using prior knowledge and organizing the learning contents by building structural relations among the single elements. Finally, permanent transfer into long-term memory representations is needed to retrieve information afterwards. This encompasses the processes of abstraction and schema building as well as the integration of the elaborated new information into prior knowledge structures (Mayer, 2001).

Moreover, Fisch's model (2000) postulates a bias in resource allocation to narrative instead of educational contents, but does not explain why this narrative dominance occurs. This may be due to the fact that narratives are treated as too global concepts and are thus not differentiated enough within the model. Therefore, the narrative aspect of this model requires further psychological elaboration, as is done in the present work by describing the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008) and the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002).

One possible explanation for the narrative dominance effect may be that constructing the mental models of a narrative and stepping into the shoes of the narrative characters through deictic shift which causes the experience of transportation and identification is perceived as being enjoyable (Green, Brock, & Kaufman, 2004; Vorderer, Klimmt, & Ritterfeld, 2004). Green, Brock, and Livingston (2004, as cited in Green et al., 2004) as well as Green, Rozin, Aldao, Pollack, and Small (2004, as cited in Green et al., 2004) have shown that measures of transportation and enjoyment are positively and highly correlated. Hale-Wisener (2004) could show only low to moderate positive correlations between transportation and enjoyment, but narrative processing and its experiential processes seem to be enjoyable nevertheless. This may

be because, playfully, many different vicarious experiences without consequences and obligations can be made (Vorderer, 1992). These positive experiences accompanying narrative processing constitute gratifications which may be one reason for the narrative dominance in hybrid television formats. The narrative elements dramatization, emotionalization, personalization, and fictionalization, among other things, may also arouse more interest for the narrative than for the expository educational contents and therefore direct the cognitive resources to the processing of the narrative and the facts tied to it. To the extent that deictic shift, transportation, and identification occupy cognitive resources, recipients must then give up consciousness of their actual selves, possibly related individual learning goals, and their surroundings, and perhaps they may not have enough resources either to process expository educational contents which are not smoothly integrated into the narrative.

6. Conclusion and Deduction of Hypotheses

The previous sections described the importance of documentaries in formal and informal science education and criticized that this subject has been neglected by psychological research. Additionally, current changes in the documentary genre were described, i.e., increasingly emerging hybrid documentary formats covering a wide range of topics, thereby combining entertaining elements with documentary material.

Various classical as well as various hybrid documentary formats were presented and their characteristics described. On these grounds, differences between both forms of documentaries were elaborated and identified as entertaining narrative elements that are additionally present in hybrid documentary formats: dramatization, emotionalization, personalization, and fictionaliziation.

These narrative elements were then described in their various forms and the degree to which they are implemented in hybrid documentary formats, and possible positive and negative influences of the single narrative elements on processing, experience, and knowledge acquisition were deduced from prior research. This systematic classification of narrative elements is assumed to be suitable for the more detailed analysis of the processing of, and experience and knowledge acquisition with narratives and hybrid documentary formats in particular. Dramatization, for instance, means to implement a narrative structure, which may enable narrative processing and narrative experiences for particular scenes or even for the whole documentary. Emotionalization, personalization, and fictionalization may further enhance the narrativity of this structure and thus facilitate narrative processing and experiences.

To better understand such narrative processing and experiences in hybrid documentary formats, models of narrative comprehension and engagement were presented. The Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008) was introduced which considers experiential aspects of narrative processing such as transportation and identification that do not occur during the processing of expository material. Transportation and

identification are both assumed to emerge during the fluent construction of the mental models of the narrative, thus indicating that both go along with better knowledge acquisition. This theoretical assumption requires empirical evidence, especially because some empirical studies indicate that this assumption is true only for particular parts of the narrative (Cowen, 1988; Mandler, 1979; Mandler & Johnson, 1977; Negrete, 2003) and that narratives are processed in an uncritical way (Green & Brock, 2000). Furthermore, it is not yet clear whether this assumption also holds for hybrid media presentations which may also allow for expository processing. Finally, identification seems to be enhanced not only by a fluent construction of the mental models, but also by perceived similarity between the recipients and the characters of the narrative (Eyal & Rubin, 2003; Maccoby & Wilson, 1957).

Furthermore, the Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002) was presented which describes the phenomenon of transportation more precisely, thereby highlighting the role of imagery as one component of transportation. Trait absorption, imagery ability, and prior involvement in the media content were postulated as further variables influencing transportation. But because this model mainly deals with the persuasive effects of transportation on attitudes and judgments, and not with the effects of transportation on knowledge acquisition, it can not shed light on the relationship between transportation and knowledge acquisition either.

After the presentation of the models of narrative comprehension and engagement, different questions arose: Because hybrid documentary formats not always use fully elaborated narratives but only narrative elements, it was questioned whether the postulated narrative elements, i.e., dramatization, emotionalization, personalization, and fictionalization, exert the same powerful influences on processing, narrative experiences (transportation and identification), and other consequences (knowledge acquisition) as full-fledged narratives. Or, to put it another way, it was asked whether gradual changes in narrativity are associated with gradual changes in narrative effectiveness. Finally, because hybrid documentary formats combine expository material with

narrative elements, it was assumed that both narrative processing and expository processing can occur during the reception of these formats. To better understand how these two types of processing interact during the reception of hybrid documentary formats, prior research on the differences between processing expository and narrative material had to be considered.

Based on this research, an advantage of narrative over expository material with regard to knowledge acquisition could be assumed. It was concluded that this might be the case because narrative and expository material evoke different kinds of processing, which are associated with different reception goals as well. With an implicit or explicit entertainment purpose, as mainly evoked by narratives, the material is processed with the aim to create a mental representation of the story, but less with the goal to connect the contents to existing prior knowledge structures. On the other hand, when an implicit or explicit learning purpose, is evoked (as is usually the case with expository material), the processing of the material involves attempts to integrate the contents into prior knowledge structures. This is accompanied by higher amounts of invested mental effort (AIME). But whether this higher AIME also leads to better knowledge acquisition depends on other things, e.g., the degree to which narratives evoke personal experiences, or the degree to which prior knowledge structures of the recipients of expository material are established, because educational contents can be tied to both of these cognitive structures. These conclusions are mainly based on the studies by Salomon and Leigh (1984) and Wolfe and Mienko (2007), the latter being the only study from this prior research which avoided the confound between content and type of presentation. Additionally, most of this research (except for Wolfe & Mienko, 2007) can only draw conclusions about the differences in knowledge acquisition between expository and narrative material, but not about differences between hybrid media presentations embedding educational facts in a narrative and pure expository presentations of educational facts.

Because the results of these studies can be applied to hybrid documentary formats only with limitations, the Capacity Model of Children's Comprehension of Educational Content on

Television (Fisch, 2000), which addressing the processing of the combination of narrative and educational material directly, was presented. In line with the results from prior research comparing pure narratives with purely expository material, Fisch (2000) postulates a narrative dominance effect with regard to resource allocation and therefore knowledge acquisition, which should be reduced, among other things, by the reception goal to learn. He also postulates a narrative distance effect, i.e., educational facts which are closely tied to the narrative should be comprehended better than more distant facts. All this can be applied to hybrid documentary formats which combine educational facts with narrative structures. But this model mainly focuses on the resource allocation processes and hence disregards other aspects of knowledge acquisition. It does also not allow any conclusions whether embedding educational facts into a narrative is conducive to knowledge acquisition, compared to presenting them in a purely expository way. Additionally, the model does not explain *why* the narrative dominance effect occurs. One reason may be that the pleasant narrative experiences of transportation and identification are perceived as gratifications for narrative processing. These narrative experiences draw on cognitive resources; therefore, when a person is engaged in transportation and identification processes, it is possible that there is no or only little capacity left for adequate processing and storage of distant educational contents, which results in the postulated narrative distance effect.

To test this postulated relationship between the identified narrative elements, narrative experiential processes, and narrative dominance in processing hybrid documentary formats more precisely, one has to choose one of the various hybrid documentary formats, thereby reducing the possible narrative elements to examine, because not all hybrid documentary formats use all narrative elements to a high degree. In the present work, it was opted for archaeological television documentaries using re-enactments, because they are not serial, relatively short in duration and rather documentary than entertaining and because this program format has a clear educational mandate to inform their recipients correctly about scientific topics. Archaeological

topics were chosen in particular, because the lack of appropriate visualizations of the past cultures the documentaries present provides a good and comprehensible reason to use fictionalizations in the form of re-enactments. Additionally, archaeology belongs to the historical sciences (Cleland, 2002) and therefore allows connecting educational contents more easily to a narrative. Other, more structural topics, such as mathematics or anatomy, can be connected to a chain of causal events so naturally. The documentaries used in the present work are dramatized through the implementation of a narrative, and all of these documentaries use fictionalizations in the form of re-enactments. They contain educational facts about archaeology and history which contribute, more or less, to the implemented narrative.

Regarding the chosen hybrid documentary material and the considerations about the relationship between narrative elements, narrative experiential processes, and narrative dominance described above, the following assumptions can be formulated: Because all these documentaries contain a narrative structure (dramatization), the pleasant experiences of transportation into and identification with the past cultures in the documentaries should be possible within this hybrid documentary format as well and should also cause narrative dominance.

Moreover, re-enactments (fictionalization) providing concrete pictures of past events should support imagery. Therefore, among other variables such as trait absorption, imagery ability and prior involvement in the film topics should enhance transportation like is postulated by the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002). Concrete images also relieve the recipients of the resource-demanding process of imagining the past cultures on their own. This should set resources free and thus aid a better and more fluent construction of mental models of the documentaries which, in turn, should lead to enhanced transportation as postulated by the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008).

Re-enactments (fictionalization) providing concrete pictures of the past culture should also allow the recipients to better perceive similarities between themselves and the people of the past culture. Without re-enactments, viewers are required to imagine people from past cultures on their own. This is difficult and may thus result in rather abstract mental representations of the people from the past culture. Visualizing re-enactments, on the other hand, provides concrete pictures and therefore allows the recipients to make more elaborated comparisons between the past and their own culture, thus to perceive more similarities – an important predictor of identification (Eyal & Rubin, 2003; Maccoby & Wilson, 1957).

Therefore, the following three assumptions are postulated based on the models by Green and Brock (2002) and Busselle and Bilandzic (2008):

1. *Fictionalization in the form of visualizing re-enactments enhances the narrative experience of transportation and perceived similarity between recipients and people from the past period.*

2. *Personal variables like trait absorption, imagery ability, and prior involvement enhance transportation.*

Additionally, a fluent construction of mental models of the documentary should not only result in enhanced transportation during reception, but also lead to better knowledge acquisition and retrieval after watching the documentaries, as postulated by the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008). But if narrative dominance, as is postulated by the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000), also occurs in these archaeological television documentaries, more cognitive resources should be allocated to facts closely tied to the narrative plotline than to facts that are more distant to the narrative in the documentaries. Therefore, knowledge acquisition should be better for close than for distant facts. This narrative distance effect, in turn, should be reduced by an explicit reception goal to study the educational contents presented in the documentaries.

Therefore, the following assumptions can be deduced from the models by Busselle and Bilandzic (2008) and Fisch (2000):

3. *Transportation goes along with knowledge acquisition.*

4. *Facts that are close to the narrative plotline are better remembered than facts that are distant to the narrative plotline (narrative distance effect).*

5. *Watching documentaries with the purpose to inform oneself reduces the narrative distance effect, while watching for entertainment purposes does not.*

These postulated hypotheses are examined in the following two studies. The first one deals with the influence of fictionalization and personal variables on narrative experiences with archaeological television documentaries, and the second one deals with the processing of and experience and knowledge acquisition with archaeological television documentaries.

7. Study I: Influence of Visualizing Fictionalization on Narrative Experience with

Archaeological Television Documentaries

In archaeological television documentaries with re-enactments, two types of narrative elements are used: dramatization and fictionalization. This means that they contain a narrative about the history of a past culture, which potentially enables the pleasant narrative experiences of transportation into and identification with the presented past culture (Busselle & Bilandzic, 2008; Green & Brock, 2002), although this may happen to a lesser extent than with full-fledged narrative movies.

These narrative experiences may also be influenced by fictionalizations in the form of plausible re-enactments visualizing the past periods, thereby filling gaps in the visual presentation. These ready made images support the recipients in imagining past periods. Therefore, the imagery component of transportation described in the Transportation Imagery Model of Narrative Persuasion by Green and Brock (2002) is facilitated, which should result in enhanced transportation with re-enactments. By relieving the recipients from the resource-demanding process of imagining past cultures on their own, re-enactments may also contribute to a more fluent processing of the narrative and thus to a more fluent generation of the mental models of the narrative. This, in turn, should lead to enhanced transportation, as is postulated in the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008).

Additionally, fictionalizations in the form of visualizing re-enactments should allow the recipients to better perceive similarities between themselves and the people from the past culture. Without re-enactments, the viewers are required to imagine people from the past culture on their own. This is difficult for them and may therefore result in rather abstract mental representations. Visualizing re-enactments, on the other hand, provides concrete pictures of the people from the past culture and therefore allow the recipients to make better comparisons between the past and

their own culture and thus also perceive more similarities – a predictor of identification (Eyal &

Rubin, 2003; Maccoby & Wilson, 1957).

Besides, prior literature postulated influences of personal variables on transportation which

have not been sufficiently confirmed by empirical studies. Trait absorption as a "disposition for

having episodes of 'total' attention that fully engage one's representational (i.e., perceptual,

enactive, imaginative, and ideational) resources" (Tellegen & Atkinson, 1974, p. 268), for

instance, was shown by Green (as cited in Green & Brock, 2002) as well as by Green and Brock

(2000) to be moderately correlated to transportation. But the postulated facilitating influences of

other variables such as imagery ability and prior involvement in the film content still have not

been empirically confirmed.

With regard to imagery ability, up to now it was only assumed that transportation,

especially when reading books, derives its force from most recipients' general ability to create

vivid images, and that therefore imagery ability should enhance transportation (Green & Brock,

2002). Furthermore, it is not clear whether this assumption also holds for audiovisual material,

where imagery ability may play a slightly different, but also important role, e.g., with regard to

connecting visual images to the generated mental models.

Considering prior involvement, up to now it has only been argued that greater initial

interest or motivation can lead to higher cognitive and emotional engagement (Green, 2004; Tan,

1996) and that therefore personal involvement with the contents of the narration may influence

transportation. But in this case, no empirical evidence which directly examines the assumption

that prior involvement enhances transportation is available either.

Therefore, the present study examines the following hypotheses using archaeological

television documentaries with re-enactments:

H1:   Documentaries with re-enactments lead to higher transportation than

        documentaries without re-enactments.

H2:   Documentaries with re-enactments lead to higher perceived similarity between the

recipients' own culture and the presented past culture than documentaries without

re-enactments.

H3:   Viewers with high trait absorption are more transported than viewers with low trait

absorption.

H4:   Viewers with high imagery ability are more transported than viewers with low

imagery ability.

H5:   Viewers with high prior involvement in the film topics are more transported than

viewers with low prior involvement in the film topics.

7.1 Method

Subjects

Of the 234 students from various disciplines who participated in the study, data from $n =$

212 subjects, 63 (29.7%) males and 149 (70.3%) females aged between 18 and 45 ($M = 24.40$,

$SD = 4.25$) were analyzed. The 22 subjects who were excluded from analysis were students of

Archaeology, History, or Cultural Anthropology (7 subjects), subjects who knew some or all of

the material from television (6 subjects), or had already visited the archaeological excavations

presented in the material (9 subjects). All subjects were native German speakers. It was decided

to use these exclusion criteria, because a group of subjects with low prior knowledge was

preferred as being representative for the typical viewers of television documentaries. It was also

attempted to avoid reminding the subjects of any prior journey to the excavation area, because

this may have distracted their attention from the documentary or may even have transported

them to their own 'summer vacation' instead of transporting them to the past period. Subjects

had to be native speakers in order to ensure that all subjects were able to understand the

information presented in the documentaries.

Material

German television channels and programs were searched for archaeological television documentaries with a narrative structure and re-enactments. A pool of 90 such documentaries was collected and scanned for various selection criteria: typicality of format; addressing archaeological and historical topics that are neither part of the German canon of education nor common in archaeological documentaries; significant amount of re-enactments; and quality of re-enactments. Finally, three typical television documentaries including re-enactments that had been broadcasted on the German public television in 2007 were selected. All of them were from the same documentary series called *ZDF-Expedition – Versunkene Metropolen* (ZDF Expedition – Lost Metropolises). Hence, the films were very similar with regard to production style and thematical scope. Nevertheless, the documentaries in this series address different contents in the form of different cultures. They were all about lost cities and their cultures: Hattusa, the capital of the Hittites (Wilson, Moroni, & Lippert, 2007); Piramesse, the city of Ramses II (Everest, Lippert, & Moroni, 2007); and Tucume, a pyramid sight in Peru that had been temporally governed by the Incas (Laverty, Moroni, & Lippert, 2007) – each one about a topic that is not addressed by the German canon of education and is not common in other documentaries (for a brief description of the television series in general and the three episodes in particular see Appendix A). All of these documentaries comprise dramatization through the implementation of a narrative and all of these documentaries use a relatively high amount of fictionalizations in the form of re-enactments of good quality. Each documentary told the history of one past culture and its dramatic ending based on archaeological facts and other historical sources. Hence, the archaeological and historical educational facts contribute more or less to the narrative about the past. Scenes of landscape, excavation areas, archaeological objects, computer-generated or animated maps, experts at work, and expert interviews alternated with re-enactments.

The re-enactments used in all these documentaries were very similar. They were staged plays in which the behavior of the actors was scripted. They were expository as well as narrative. This means that they illustrated former people in certain situations such that the viewers could observe characteristics of the former people, their visual appearance and environment (expository); the actors also presented activities of these people and events with causes and consequences and thus told the story visually (narrative). The re-enactments were acted out without speech and were played by non-professional actors. Computer-generated images were used to recreate parts of the most important buildings as a scenery for the re-enactments. An off-screen narrator guided the recipients through the documentaries which mainly focused on the cities and their cultures and not on particular persons.

To analyze the postulated hypotheses that re-enactments enhance the narrative experiences of transportation and perceived similarity, documentaries without re-enactments had to be compared to the previously described archaeological television documentaries with re-enactments. In order to create such control conditions, the re-enactment scenes about the past period were cut out from the original video track and replaced with landscape scenes or other appropriate material from the same documentary. From the audio track, only sounds associated with the cut-out re-enactments were deleted, e.g., the clashing of swords in a re-enacted battle; however, audio information provided by the narrator off-screen was not altered. The original documentaries also contained virtual reality reconstructions of buildings as well as re-enactments showing the time period of former archaeologists who had worked on the same research questions as archaeologists today. These virtual reality and re-enactment scenes were cut out from the video tracks of both conditions and replaced with landscape scenes or other appropriate material from the same documentary. This was done because re-enactments of an additional time period (former archaeologists) may also lead to transportation, which was not a focus of the

study. In the end, 30–40 % from a total of 30–35 minutes material were distributed across the

entire film. The experimental condition differed from the control condition only with regard to

these scenes (see appendix B for examples). Compared to the experimental conditions, the

control conditions did not lack filmic quality as was judged by three independent expert raters

(see appendix C).

Design

There was a 2x3 between subject design with re-enactment (with vs. without) and film

content (Hattusa vs. Piramesse vs. Tucume) as variables, resulting in six different conditions.

Measures

Transportation. Transportation was assessed with an altered version of the

Deutschsprachige Transportation-Skala für die Filmrezeption (Appel, 2006) – a German

adaptation of the Transportation Scale by Green and Brock (2000) on film reception. The

documentary material comprises shifts between three time periods: the time of the archaeologists

today, who are searching for the reasons why the cities got lost; the time of the former cultures

depicted by re-enactments, which is being studied by these archaeologists; and the time of

former archaeologists, who did prior research on the same archaeological questions as

archaeologists today. Thus, there are three time periods into which transportation is possible.

Since the Transportation Scale for Film Reception does not differ between these time periods,

some items had to be altered by formulating more specific questions regarding the time period of

the former culture in question. The scale consisted of 15 items, e.g., *I was mentally involved in*

the depicted historical period while watching it; The depicted historical period in the film

affected me emotionally; or *While I was watching the film, I could easily imagine the depicted*

past period[1]. Answers were given on a 7-point Likert scale, ranging from *does not apply to me at*

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[1] All items of all questionnaires used in the present work were given to the subjects in German
language.

all (1) to *absolutely applies to me* (7). Sums were calculated for all items, leading to scores

between 15 and 105 points.

     Perceived Similarity. Amount of perceived similarity between the people of the depicted

past periods and the viewing subjects was assessed with the Q measure by Hofstätter (1986). He

altered the method of semantic differentials developed by Osgood and colleagues (e.g., Osgood,

Suci, & Tannenbaum, 1957) to create polarity profiles to assess the meaning of concepts and

issues. Subjects were given the original 24 semantic differentials of various attribute pairs, e.g.,

high – low, *good – bad* or *quiet – loud* by Hofstätter (1986), by which they were asked to rate

first the depicted past period and, in a second step, their own culture of today. This resulted in

polarity profiles for both time periods. Pearson correlations between the ratings of the two

polarity profiles were calculated, leading to a measure of perceived similarity between the people

of these two time periods and to scores that theoretically ranged from $Q = -1$ to $Q = +1$, with $Q =$

-1 indicating low, $Q = 0$ indicating medium, and $Q = +1$ indicating high perceived similarity

values.

     Trait absorption. Trait absorption as a "disposition for having episodes of 'total' attention

that fully engage one's representational (i.e., perceptual, enactive, imaginative, and ideational)

resources" (Tellegen & Atkinson, 1974, p. 268) was assessed with the Absorption-Skala, a

German adaptation of the Tellegen Absorption Scale (TABS; Tellegen & Atkinson, 1974) by

Ritz, Maß, and Dahme (1993a, 1993b). The scale contains 34 items, e.g., *When I am listening to*

music, it captivates me so much that I am unable to attend to anything else; *A sunset can affect*

me very much; or *I can often feel the presence of another person even before I really see or hear*

her (or him), which are answered on a five-point Likert scale, ranging from *does not apply to me*

(0) to *absolutely applies to me* (4). Sum scores were calculated, ranging from 0 to 136 points.

Ritz and Dahme (1995) found the split-half reliability ($r_{tt} = .86–.88$) and the internal consistency

($\alpha = .88–.89$) to be acceptable.

Involvement. In the present study, the concept of involvement was understood as "a person's perceived relevance of the object based on inherent needs, values, and interests." (Zaichkowsky, 1985, p. 342). Therefore, involvement was assessed with the revised Personal Involvement Inventory (PII) by Zaichkowsky (1994), which was translated into German. Therein, the Hittites, Egyptians, or Incas were evaluated on ten different 7-point bipolar dimensions, e.g., *important – unimportant*, *boring – interesting* or *means nothing – means a lot to me*. Sum scores were calculated, ranging from 10 to 70 points.

Visual Imagery. To measure visual imagery, the Vividness of Visual Imagery Questionnaire (VVIQ; Marks, 1973) was translated into German. Subjects were asked to imagine four scenes, e.g., *Think of a rising sun. Consider carefully the picture that comes before your mind's eye* and had to imagine four details for each of these scenes, resulting in a total of 16 items, e.g., *The sun is rising above the horizon into a hazy sky*. After every item, subjects were asked to mark one of five answers representing different degrees of vividness of imagery they had experienced during their task, ranging from *no image at all, you only "know" that you are thinking of the object* (1) to *perfectly clear and as vivid as normal vision* (5). Mean scores were calculated, ranging from 1 to 5 points.

Procedure

In order to ensure a leisurely viewing atmosphere and attitude as well as maximum immersion, the study did not take place in a laboratory, but instead, subjects (groups of approximately 20 people) were invited to a local cinema. With the more immersive cinema, it was attempted to avoid floor effects of the variable transportation and to create an informal leisure setting to enhance ecological validity. Subjects took a seat in the middle tiers and were given the first questionnaire containing measures of trait absorption, visual imagery, and involvement in the topic of the film they were going to see. After answering the first questionnaire, subjects watched one of the six films, depending on the condition they were in.

After watching the film, subjects were asked to answer the second questionnaire containing

measures of transportation, perceived similarity, assessment of the exclusion criteria explained

above, and demographic variables (age, sex, and course of studies). Both questionnaires with the

measures described above, using the film about Hattusa as an example, are provided in appendix

D.

7.2 Results

Transportation

    Influence of re-enactments on transportation. A 2x3 analysis of variance was calculated

with re-enactment (with vs. without) and film content (Hattusa vs. Piramesse vs. Tucume) as

between-subject factors. Transportation was normally distributed within the six conditions.

Results showed a significant main effect of re-enactments on transportation, $F(1, 203) = 4.95$, p

$< .05$, $\eta_p^2 = .024$. Subjects showed higher transportation levels when watching the documentary

with re-enactments ($M = 58.61$, $SD = 12.67$) compared to the documentaries without re-

enactments ($M = 54.55$, $SD = 14.79$). There was no significant main effect of film content and no

significant interaction between film content and re-enactments on transportation. Generally,

there was a medium mean transportation across all subjects ($M = 56.63$, $SD = 13.86$), with

individual values ranging from 26 to 90 points.

    *Influence of personal variables on transportation: Trait absorption, visual imagery, and

involvement.* A multiple regression analysis was performed to test the influences of re-

enactment, trait absorption, prior involvement, and visual imagery ability on transportation. All

predictors were entered simultaneously into the regression analysis. Results showed a significant

effect ($R^2 = .27$, $F(4, 198) = 18.56$, $p < .001$). Re-enactments ($\beta = .22$, $p < .001$), disposition to

absorption ($\beta = .17$, $p < .05$), visual imagery ability ($\beta = .22$, $p < .01$) and prior involvement in

the film topic ($\beta = .32$, $p < .001$) were significant predictors of transportation. All relationships

were in the predicted direction and all predictors together accounted for 27.3 % of variance.

Mean scores across all subjects in this analysis were $M = 67.52$ ($SD = 21.17$) for trait absorption,

$M = 40.75$ ($SD = 10.44$) for prior involvement, and $M = 3.66$ ($SD = 0.63$) for visual imagery.

In summary, in line with the initial hypotheses, re-enactment did enhance transportation,

as did trait absorption, prior involvement, and visual imagery ability. Hypotheses H1, H3, H4

and H5 could therefore be confirmed by the results.

Perceived Similarity

To test the influence of re-enactments on perceived similarity, a 2x3 analysis of variance

was done with two variables – re-enactment (with vs. without) and film content (Hattusa vs.

Piramesse vs. Tucume). Perceived similarity was normally distributed within the six conditions.

For technical reasons, only $n = 118$ of the $n = 212$ subjects could be analyzed. Results showed a

tendency for a significant main effect of re-enactments on perceived similarity, $F(1, 112) = 3.90$,

$p = .051$, $\eta_p^2 = .034$. Subjects tended to perceive more similarity with the presented cultures

when watching the films with re-enactments ($M = .13$, $SD = .28$) than without re-enactments ($M = .02$, $SD = .33$). There was no significant main effect or tendency for a main effect of film and

no significant interaction or tendency for an interaction between film and re-enactments on

perceived similarity either. Generally, there was a medium mean perceived similarity across all

subjects ($M = .08$, $SD = .31$), with individual values ranging from -.63 to .68 points.

Thus, hypothesis H2 was confirmed only by trend. Re-enactments tended to enhance

perceived similarity between the people of the depicted past period and the subjects.

7.3 Discussion

It was assumed that narrative structures in archaeological television documentaries with

re-enactments enable the pleasant narrative experience of transportation into the past cultures

presented (Busselle & Bilandzic, 2008; Green & Brock, 2002), although this may be the case to a

lesser extent than with full-fledged narrative movies. This could be confirmed by the present results. Regarding the mean levels of transportation measured across all subjects, it can be concluded that the narrative structure in archaeological television documentaries is actually able to elicit the narrative experience of transportation, although transportation levels across all subjects are only medium in a highly immersive cinema. This observation suggests that archaeological television documentaries may be even lower in their transportiveness when viewers watch them at home on their TV sets. This may be due to the expository parts in the documentary and the minimal narrative conditions. The expository scenes may pull the viewers out of their transported state or sometimes may not leave enough time for the viewers to even have the chance to become transported. Therefore, higher levels of transportation with more re-experiencing of the past periods could perhaps be reached with longer narrative scenes. Accordingly, there are also documentaries today such as the series *Ancient Rome: The Rise And Fall Of An Empire* (Hedgecoe, 2006), which use re-enactments not only as short scenes, but create a more movie-like documentary by using long, high-quality re-enactments with dialogues and professional actors, thus constituting a nearly full-fledged narrative. Hence, transportation in archaeological television documentaries may be enhanced by a higher quantity and quality of narrative re-enactments.

Additionally, it was assumed that the narrative experience of transportation and also perceived similarity between the past and the viewers' own culture may be enhanced by fictionalizations in the form of plausible re-enactments visualizing the past periods, thereby filling gaps in the visual presentation. Results of the study showed that re-enactments in archaeological television documentaries actually enhance transportation into the past periods presented, although this effect was only small in size. But this may be due to the many other variables influencing transportation in hybrid documentary formats – some of them having also been addressed in this study.

As assumed, the examined effect of re-enactments on transportation may be due to the visualizing characteristics of re-enactments. In particular, it is conceivable that by providing them with ready-made images, recipients are supported in imagining past periods, and that therefore the imagery component of transportation is enhanced (Green & Brock, 2002). This is in line with the assumption that audiovisual media are more likely to transport their recipients than books that do not provide pictures of the narrative world, because their higher immersion helps create a spatial mental model of the world in the narrative (Green et al., 2008; Schubert & Crusius, 2002).

It is also possible that re-enactments relieved the recipients from the resource-demanding process of imagining the past cultures on their own and in this way contributed to a more fluent processing of the narrative and to a more fluent generation of the mental models of the narrative. This may lead to enhanced transportation, as is postulated in the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008).

Additionally, re-enactments could lead to enhanced transportation in other ways, not previously assumed (and certainly not mutually exclusive). It is possible that the entertaining and visually narrative re-enactments aroused more interest in our subjects by referring to their viewing habits (Wolf, 2003), while the documentaries without re-enactments did not. In addition, the more concrete presentation of the past periods with re-enactments may also have led to an enhancement of interest, a causal relationship that Sadoski et al. (2000) were able to show in their study about the concreteness of texts. This enhanced interest for material containing re-enactments may then have increased cognitive and emotional engagement and therefore transportation, a relationship already found by Tan (1996) and Green (2004). This is also in line with other authors (Ainley, Hidi, & Berndorff, 2002; Hidi, 1995; Hidi, Renninger, & Krapp, 2004; McDaniel, Waddill, Finstad, & Bourg, 2000; Renninger & Wozniak, 1985), who found (or

at least postulated) a relationship between interest and attention, the cognitive component of transportation.

Another possible way in which re-enactments could have facilitated transportation is through enhancement of the emotional component of transportation by providing emotional images. Seeing people suffer from hunger, fight in battles, make sacrifices, or play games may have enhanced emotional engagement in the viewers, resulting in higher transportation.

The results of the present study also revealed that re-enactments tend to enhance perceived similarity with the past culture. This may also be due to the more concrete presentation of the past period by re-enactments, as assumed. Documentaries with re-enactments allowed the recipients to make more detailed comparisons between the past and their own culture and therefore perceive more similarities than was the case for documentaries without re-enactments. In the latter case, without re-enactments, the viewers were required to imagine people from the past cultures on their own. And because this is difficult for them, these recipients were only able to create rather abstract mental representations of the people from the past cultures and therefore did not have the chance to perceive as many similarities between themselves and these people as recipients who watched the documentaries with concrete re-enactments.

Another possible explanation for this result may be that having modern-day actors play people of former times in historically correct settings and costumes leads to a blurring of the border between the past and the present time. This collapse of temporalities (Agnew, 2007) may therefore lead to a collapse of borders between in- and out-groups and tend to enhance perceived similarity.

Reasons why this effect only marginally failed to reach significance may be that because of technical reasons, only about half the subjects could be used to analyze this hypothesis. It is possible that this effect could have reached significance with the same number of subjects as was used to analyse the other hypotheses. Besides, the measure with which perceived similarity was

assessed is rather unconventional and may not have been appropriate. Nevertheless, re-enactments tend to enhance perceived similarity, which is an important predictor of identification (Eyal & Rubin, 2003; Maccoby & Wilson, 1957) and may therefore also facilitate the narrative experience in an indirect way.

Finally, it was assumed that personal variables influence transportation as well – influences that have been postulated, but not sufficiently examined empirically in prior studies. Trait absorption, visual imagery ability, and prior involvement in the film topic were assumed to enhance transportation. Results confirmed the expected effects of these variables on transportation. With regard to trait absorption, results were in line with Green (as cited in Green & Brock, 2002) and Green and Brock (2000), showing that subjects with higher disposition to absorption were also more fully transported into the past period. This means that the disposition to be able to totally focus one's attention and fully engage one's representational (i.e., perceptual, enactive, imaginative, and ideational) resources facilitates the journey into the past periods depicted in the narrative structure of the documentary.

Prior involvement in the film topics, too, had an important influence on transportation. Subjects with higher prior involvement were also more fully transported into the past period. Hence, more perceived prior relevance of the film topics facilitates transportation, perhaps by reflecting prior knowledge as well as interest, which would be in line with Tan (1996) and Green (2004) again, who suggested that initial interest can lead to more cognitive and emotional engagement.

The results also showed an important influence of visual imagery ability on transportation. Subjects with higher ability to create vivid visual images were also more fully transported into the past period. This is in line with previous assumptions about the relationship between visual imagery ability and transportation (Green & Brock, 2002). Even if persons with low imagery propensity are able to create images in response to vivid description in a narrative,

as Sheehan (1967) and Sheehan and McConkey (1982) were able to show, higher levels of

imagery ability lead to higher transportation into the past periods. This accentuates the general

importance of the visual imagery component of transportation as well as the importance of visual

imagery ability for transportation with audiovisual material.

   In addition, results revealed that re-enactments along with the personal variables

(disposition to absorption, visual imagery ability, and prior involvement in the film topic)

account for nearly one third of the variance of transportation. This is substantial, particularly

when taking into account that these predictors, especially visualizing re-enactments, visual

imagery ability and, partially, trait absorption as well, mainly refer to the visual imagery

component as one of the three components of the transportation concept. In contrast, the

attentional and emotional components of transportation were only partially addressed by the

predicting variables.

   Taking all the results together, it could be shown that archaeological television

documentaries with re-enactments containing a narrative structure are able to elicit the narrative

experience of transportation, although partly in a reduced way compared to full-fledged

narratives. The postulated hypotheses with regard to the influences of fictionalizations in the

form of visualizing re-enactments on the narrative experience of transportation and on perceived

similarity could be clearly confirmed for transportation and by trend for perceived similarity as

an important predictor of identification. This shows that re-enactments are a valuable instrument

for film makers to enhance narrative impact. However, one must keep in mind that the long-term

consequences of the use of re-enactments, particularly on knowledge acquisition and acquisition

of historical competence, are still unclear and have to be addressed in further empirical studies.

Additionally, prior assumptions about the influence of personal variables on transportation could

be confirmed by the present results. The fact that these personal variables mainly draw on the

imagery component of transportation and that, together with the re-enactments, they explain

nearly one third of the variance of transportation highlights the role of visual imagery for

transportation with audiovisual media as well. Finally, based on these results another research

question arises: Because the narrative structure in the archaeological television documentaries

used was shown to be able to cause the narrative experience of transportation, it may also be able

to cause narrative dominance, i.e., that more cognitive resources are allocated to the narrative in

the documentary than to the archaeological and historical facts that are more distant to the

narrative (Fisch, 2000). To test this assumption, a second study was conducted.

8. Study II: Processing of and Experience and Knowledge Acquisition with Archaeological

Television Documentaries

Archaeological television documentaries contain narratives about the history of past cultures that are based on archaeological facts and other historical sources. Hence, the archaeological and historical educational facts contribute more or less to the narrative about the past culture. Assuming that archaeological television documentaries containing such narrative structures are similarly processed as full-fledged narratives, as is described in the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008), the experience of transportation, examined in the study above, should be a consequence of the fluent construction of the mental models of the documentary. According to the model by Busselle and Bilandzic (2008), knowledge acquisition is another consequence of the fluent construction of the narrative, thus indicating that high transportation goes along with high amounts of knowledge acquisition. But this theoretical assumption remains to be shown empirically, especially because other empirical studies indicate that this cannot be taken for granted and that this is true only for particular parts of the narrative (Cowen, 1988; Mandler, 1979; Mandler & Johnson, 1977; Negrete, 2003). In other words, transportation seems to go along with better knowledge acquisition for particular facts only. Furthermore, it is not yet clear whether this assumption also holds for hybrid media presentations which may also allow for expository processing. Therefore, the relationship between transportation and knowledge acquisition will be addressed in this study.

Hybrid media presentations like archaeological television documentaries with re-enactments are especially addressed by the Capacity Model of Children's Comprehension of Educational Content on Television by Fisch (2000). It postulates that when processing such media presentations combining narrative and educational contents, cognitive resources are primarily dedicated to the narrative instead of the educational contents. This narrative dominance may therefore occur in archaeological television documentaries as well. If this is the case, other

assumptions made by the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000), such as the narrative distance effect and the influence reception goals have on it may also occur. Hence, archaeological and historical educational facts that are closely tied to the narrative plotline should be better learned than facts that are more distant to the narrative plotline. This narrative distance effect was also observed by Negrete (2003), who, among other things, analyzed knowledge acquisition of facts in a narrative in the context of science education, as well as by Cowen (1988), who could show better comprehension of central contents of a televised police drama than of both peripheral and implicit contents.

Moreover, the explicit reception goal of the viewers to inform themselves should diminish this narrative distance effect, while the explicit reception goal of the viewers to entertain themselves should not. With a reception goal to inform oneself, viewers of the documentaries should voluntarily allocate cognitive resources to these archaeological and historical educational facts as well which are more distant to the narrative plotline.

The different reception goals to inform and to entertain oneself should also go along with different amounts of invested mental effort (AIME) dedicated to the documentaries. Viewers with an information purpose should invest more mental effort than viewers with an entertainment purpose. This is in line with Salomon and Leigh (1984), who were able to show this effect with children reading or watching narratives, but could find low correlations only between AIME and knowledge acquisition.

Therefore, the present study examines the following hypotheses using archaeological television documentaries:

H1:   Viewers who are highly transported during reception remember facts better than viewers who are less transported during reception.

H2:   Facts close to the narrative plotline are remembered better than facts distant to the narrative plotline (narrative distance effect).

H3:   Viewers watching the documentaries with the purpose to entertain themselves

remember facts close to the narrative plotline better than facts distant to the

narrative plotline. Viewers watching the documentaries with the purpose to inform

themselves remember both types of facts equally well.

H4:   Viewers watching the documentaries with the purpose to inform themselves invest

higher amounts of mental effort than viewers watching the documentaries with the

purpose to entertain themselves.

To replicate the findings of the previous study about the influence of the personal

variables trait absorption, imagery ability, and prior involvement in the film topics on

transportation, the following hypotheses are additionally tested in this study:

H5:   Viewers with high trait absorption are more transported than viewers with low trait

absorption.

H6:   Viewers with high imagery ability are more transported than viewers with low

imagery ability.

H7:   Viewers with high prior involvement in the film topics are more transported than

viewers with low prior involvement in the film topics.

8.1 Method

Subjects

Of the 82 students from various disciplines who participated in the present study (but not

in the first study of the present work), data from $n = 70$ subjects, 24 (34.3%) males and 46

(65.7%) females aged between 19 and 37 years ($M = 24.17$, $SD = 3.37$) were analyzed. The 12

subjects who were excluded from analysis had misunderstood the entertainment instruction

(controlled by a questionnaire at the end of the study) (9 subjects), knew some or all of the

material from television (2 subjects), or had already visited the archaeological excavations

presented in the material (1 subject). As in the first study, all subjects were native speakers and

did not study archaeology, history, or ethnology.

Material

Documentaries. The same archaeological television documentaries as in the first study

were used, except for the documentary about Piramesse, because this film comprised two

narrative structures – one about the history and decline of the past culture and the other about the

work and search of today's archaeologists. This may have influenced knowledge acquisition

differently compared to the other documentaries and therefore the film about Piramesse was

excluded. Each of the two documentaries used in this study each contains only one narrative

structure with the archaeological and historical educational facts in the documentaries being

more or less important for the development of the narratives, i.e., the documentaries contain

educational facts which are close and educational facts which are distant to the narrative plotline.

No film versions without re-enactments were used in this study.

Instructions. Two instructions to be administered prior to viewing the films were created.

Both introduce, first, that the subjects will see a film of approximately 30 to 35 minutes of

length, and then briefly mention the content of this film in two sentences. It is stated that this is

an archaeological-historical film which the subjects would probably watch at home in front of

their TV sets. In the entertainment instruction, the two following sentences stated that this study

was about the goal to entertain oneself and that the subjects therefore should watch the following

film in order to entertain themselves. Additionally, the subjects were wished to have fun. In the

information instruction, instead, two sentences followed, stating that this study was about the

goal to inform oneself and that the subjects should therefore watch the subsequent film in order

to inform themselves. Additionally, the subjects were wished good luck. The words *informieren*

(inform) and *unterhalten* (entertain) were thereby additionally underlined and the wishes at the

end of the instruction were again expressed by the experimenter when starting the films. There

was no announcement of the knowledge acquisition test which the subjects had to answer in the

second part of the study one week later.

Design

There was a 2x2x2x2 design with instruction (entertainment vs. information),

transportation grouped into two categories (low vs. high) by median split, and film content

(Hattusa vs. Tucume) as between-subject variables, and narrative distance (close vs. distant) as

within-subject variable. A regression analysis was calculated to assess the influence of the

personal variables trait absorption, visual imagery ability, and prior involvement in the film topic

on transportation.

Measures

Transportation. As in the first study, transportation was assessed with an altered version

of the Deutschsprachige Transportation-Skala für die Filmrezeption (Appel, 2006) – a German

adaptation of the Transportation Scale by Green and Brock (2000) on film reception.

Amount of Invested Mental Effort (AIME). AIME was assessed with a questionnaire

containing four items which were formulated on the basis of the NASA-TLX (Hart and

Staveland, 1988) and various other studies (Cennamo, Savenye, & Smith, 1991; Salomon, 1984;

Salomon & Leigh, 1984): (1) *How much did you try to understand the film?*, (2) *How intensely*

did you concentrate during the film?, (3) *How attentively did you watch the film?*, and (4) *How*

much mind work did you dedicate during the film?. Particular attention was paid to ensure that

the items referred indeed to the effort invested by the subjects and not to their judgment of the

amount of effort which the complexity of the material afforded. The items were formulated

positively such that effort was understood as a positive motivation to understand (positive feeling

about the effort), and not as a judgment of how much strain was imposed on the subjects by the

material (negative feeling about the effort). All items were answered on a 5-point Likert scale

ranging from *not at all* (1) to *very much* (5). Mean scores were calculated, ranging from 1 to 5

points.

     Knowledge acquisition test. To develop the knowledge acquisition test, a pool of 16 items

for the film about Hattusa and of 18 items for the film about Tucume was generated. This was

done based on the audio tracks of the films, because most of the information in the documentary

is given in the audio track and not via the accompanying visual images. The items were grouped

into questions about facts that are close and facts that are distant to the narrative plot line in the

documentaries. An equal amount of items about close and distant facts were selected. In doing

so, attention was also paid that question groups about close and distant facts both contained the

same number of items referring on facts presented with and without re-enactments. In this way, a

confound between narrative distance and re-enactment could be avoided. Additionally, attention

was paid to that the items covered information across the whole documentary. Duration of scenes

(in seconds) to which the items about close and distant facts refer to (close facts: $M = 17.76$ (SD

$= 10.08$) for the film about Hattusa, $M = 17.58$ ($SD = 9.58$) for the film about Tucume; distant

facts: $M = 14.69$ ($SD = 10.10$) for the film about Hattusa, $M = 15.19$ ($SD = 11.44$) for the film

about Tucume) do not differ significantly within both films. This was calculated using *t*-tests for

independent samples using an alpha level of .20, because the null hypothesis was tested.

     This selection process resulted in 12 items for the film about Hattusa, six of them asking

for close facts (3 with and 3 without re-enactment presentation), e.g., *What did the brawl*

between king Mursili III and prince Hattusili mean to the population?, and six items asking for

distant facts (3 with and 3 without re-enactment presentation), e.g., *Which three criteria had to*

be satisfied by the horses in the military of the Hittites?. The same applied to the knowledge

acquisition test for the film about Tucume, which also contained 12 items altogether, e.g., *Which*

clever tactic was used by the Inca to avoid resistance by the locals from Tucume during the

incorporation of the city into the Inca empire? about a close fact, and *When did the season of*

pyramid building start in Tucume? about a distant fact. The items were presented in random

order in the knowledge acquisition tests and were formulated as open questions.

Answers ranged from one to five partial solutions per item, which were weighted

dependent on the maximum number of possible partial solutions for the particular item. The

maximum score for every item was therefore 1 point. Mean scores for all items about close facts

and for all items about distant facts were calculated. This means that the knowledge tests about

Hattusa and Tucume were comparable such that both had the same maximum score of 1 point for

each item, for all items about close facts (mean score), for all items about distant facts (mean

score), and for all items together (mean score). The items of the knowledge acquisition tests as

well as their solutions are presented in Appendix F.

Trait absorption. As in the first study, trait absorption was assessed with the

Absorption-Skala, a German adaptation of the Tellegen Absorption Scale (TABS; Tellegen &

Atkinson, 1974) by Ritz et al. (1993a, 1993b).

Involvement. As in the first study, involvement was assessed with the revised Personal

Involvement Inventory (PII) by Zaichkowsky (1994), which was translated into German.

Visual Imagery. As in the first study, visual imagery was measured with the Vividness of

Visual Imagery Questionnaire (VVIQ; Marks, 1973) which was translated into German.

Procedure

As in the first study, subjects were invited to a local cinema in groups of approximately

15 to 20 people. Subjects took a seat in the middle tiers and were given the first questionnaire

containing measures of trait absorption, visual imagery, and involvement in the topic of the film

they were going to see. After answering the first questionnaire, subjects read one of the two

instructions described above and then watched one of the two films (Hattusa or Tucume). After

the film, subjects were asked to answer the second questionnaire containing measures of

transportation, AIME, assessment of the exclusion criteria explained above, and demographic

variables (age, sex, and course of studies).

One week later, the subjects were invited to the laboratory at the Knowledge Media

Research Center to answer a questionnaire about the film they had watched at the cinema. This

knowledge acquisition test had not been announced in the first part of the study. Subjects who

had received the entertainment instruction at the first day of the study had to answer an

additional question on how they had understood this instruction. This was necessary because

during the first part of the experiment, it became clear that some subjects had misunderstood the

instruction because of the ambiguous German word for entertainment, *Unterhaltung*. Instead of

entertaining themselves, some subjects watched the documentaries in order to talk to others

about the documentary afterwards. These subjects were then excluded from the analyses. Finally,

subjects were debriefed about why they had not been told about the knowledge acquisition test

on day two of the experiment.

The questionnaires for the first day with all the above-mentioned measures and written

instructions (exemplary for the film about Hattusa) can be found in appendix E. The items of the

knowledge acquisition tests for both films including solutions are provided separately in

appendix F. The questionnaire about the understanding of the entertainment instruction

(exemplary for the film about Hattusa) is shown in appendix G.

8.2 Results

Inter-rater reliability for the knowledge acquisition tests.

The knowledge acquisition tests were analyzed by two raters. The tests from one third of

the subjects in each condition were analyzed by both raters separately and an inter-rater

reliability coefficient (Pearson correlation between the results of the two raters) was calculated.

With $r = .97$, inter-rater reliability was deemed good.

Item analyses of the AIME questionnaire.

An item analysis of the four-item AIME questionnaire was performed, yielding to an acceptable internal consistency of $\alpha = .74$. Discriminatory power for the single items ranged from $r_{it} = .71$ to $r_{it} = .82$.

Influence of film, instruction and transportation on knowledge acquisition for close and distant facts.

A 2x2x2x2 analysis of variance, with film (Hattusa vs. Tucume), instruction (information vs. entertainment) and transportation grouped into two categories (low vs. high) by median split as between-subject variables, and narrative distance (close vs. distant) as within-subject variable was calculated. Knowledge acquisition of close and distant facts as well as knowledge acquisition across all types of facts (close and distant together) was normally distributed within all eight conditions. Results showed a significant main effect of transportation on knowledge acquisition, $F(1, 62) = 8.33$, $p < .01$, $\eta_p^2 = .118$. Subjects with high transportation levels ($M = .42$, $SD = .19$) scored significantly higher on the knowledge acquisition tests than subjects with low transportation levels ($M = .34$, $SD = .20$). There was also a significant main effect of narrative distance on knowledge acquisition, $F(1, 62) = 43.79$, $p < .001$, $\eta_p^2 = .414$. Subject recalled significantly more close facts ($M = .46$, $SD = .22$) than distant facts ($M = .31$, $SD = .17$). Additionally, there was a significant main effect of film on knowledge acquisition, $F(1, 62) = 15.14$, $p < .001$, $\eta_p^2 = .196$. Subjects recalled significantly more facts from the film about Hattusa ($M = .45$, $SD = .21$) than from the film about Tucume ($M = .32$, $SD = .17$). There were no other significant main effect and no significant interactions in this analysis, in particular, no effect of instruction. Therefore, H1 about the positive relationship between transportation and knowledge acquisition, and H2 about the narrative distance effect could be confirmed by the results; H3, on the other hand, could not, because the variation in the reception goal instruction did not influence the narrative distance effect.

Influence of instruction on AIME.

To test whether the different instructions had the expected effect on amount of invested mental effort (AIME), a 2x2 analysis of variance was calculated with film (Hattusa vs. Tucume) and instruction (information vs. entertainment) as between-subject variables. AIME was normally distributed within the four conditions. Results showed a significant main effect of instruction on AIME, $F(1, 66) = 4.85$, $p < .05$, $\eta_p^2 = .068$. Subjects who watched the films for information ($M = 4.06$, $SD = .48$) showed significantly higher AIME than subjects who watched the films for entertainment purposes ($M = 3.77$, $SD = .60$). There was no significant main effect of film and no significant interaction between film and instruction on AIME. Therefore, H4 could also be confirmed by the results.

Influence of personal variables on transportation.

To analyse the influence of trait absorption, visual imagery ability and prior involvement on transportation, a multiple regression analysis was performed. All three predictors were entered simultaneously into the regression analysis. Results of the regression analysis showed a significant effect, $R^2 = .31$, $F(3, 64) = 9.48$, $p < .001$. Visual imagery ability, $\beta = .38$, $p < .01$, and prior involvement in the film topic, $\beta = .29$, $p < .05$, are significant predictors of transportation. Trait absorption in this analysis showed not to be a significant predictor of transportation. All relationships were in the predicted direction and all predictors together accounted for 30.8 % of the total variance. Mean scores across all subjects were $M = 65.46$ ($SD = 20.39$) for trait absorption, $M = 41.24$ ($SD = 9.53$) for prior involvement, and $M = 3.58$ ($SD = 0.63$) for visual imagery. Mean levels of transportation across all subjects in this study were $M = 55.70$ ($SD = 13.90$), with individual transportation values ranging from 28 to 90. Therefore, H6 and H7 could be confirmed by the results; H5, on the other hand, could not.

8.3 Discussion

It was assumed that the narrative experience of transportation, which was shown to occur in archaeological television documentaries in the first study of the present work, goes along with knowledge acquisition. This could actually be confirmed by the present study. Subjects with high transportation during the reception of the documentaries scored higher on the knowledge acquisition test one week after viewing than subjects with low transportation during reception. Because transportation as well as knowledge acquisition are assumed to occur during the reception, but were both measured offline, this result does not allow for a causal interpretation. Although different cause-effect relations may be possible, it seems warranted to interpret this result on the only theoretical basis available: the fluent construction of the mental models of the documentary as the common cause of transportation and knowledge acquisition, as postulated by the Model of Narrative Comprehension and Engagement by Busselle and Bilandzic (2008). Therefore, the present results also yield evidence for this theoretical model. The undisturbed and fluent processing of close and distant archaeological and historical educational facts embedded in the narrative of the documentary may have actually lead to the experience of transportation as well as to a detailed and congruent mental model providing the basis for good retrieval in the knowledge acquisition test. On the other hand, if subjects could not develop such an elaborated mental model fluently, for instance, because of personal or cognitive aspects, they may have been less transported and may also have attained lower scores in the knowledge acquisition test. Hence, persons who become more transported while watching the film also learn more educational facts from television documentaries, and this holds true for all facts independent of whether they are close or distant to the narrative plotline.

Additionally, it was assumed that narrative structures in archaeological television documentaries are not only able to elicit narrative experiences, as was shown in the first study of the present work, but that they are also able to cause narrative dominance, i.e., that more

cognitive resources are allocated to the narrative in the documentary than to the archaeological and historical facts being more distant to the narrative (Fisch, 2000). Therefore, it was assumed that facts close to the narrative plotline are remembered better than facts distant to the narrative plotline. Results showed that this is exactly the case. Subjects scored better for close facts than for distant facts in a one-week delayed knowledge acquisition test. This confirms not only the hypothesis that narrative dominance also occurs in archaeological television documentaries with re-enactments, but also provides empirical evidence for the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000) and proves that the model can be applied to hybrid documentary formats as well. The results are also in line with findings by Negrete (2003), who showed that educational facts were more likely to be remembered when it was crucial to the development of the story, and Cowen (1988), who found that central contents of a televised police drama are better comprehended than both peripheral and implicit contents.

The narrative distance effect may be due to the different processes associated with the reception of narratives versus expository materials. As prior research has shown (Wolfe & Mienko, 2007), narratives are processed in order to understand the narrative and not in order to attach embedded educational contents to prior knowledge structures. Because of the narrative dominance, processing the narrative had highest priority for the subjects, and in order to understand the narrative in the archaeological television documentary, it was important for them to process and continuously update the information that was crucial to the development of the narrative (Zwaan et al., 1995). Therefore, information close to the narrative plotline was learned better than other, more distant information. And because narratives have the potential to trigger personal experiences (Seilman & Larsen, 1989) or other narratives stored in memory, these narratives may actually have evoked such memories the information in these narratives could be tied to and are therefore also remembered over a one-week period of time.

On the other hand, it could be argued that prior differences in difficulty between the items on close and distant facts and not the narrative distance effect are responsible for the results of the present study. To test this assumption, an additional control study was conducted, which is described below. The results of this control study revealed that items asking for close and distant facts are equally difficult independent of narrative distance, and that therefore narrative distance is indeed responsible for the narrative distance effect in the second study.

Moreover, it was assumed that the reception goal to inform oneself would reduce this narrative distance effect, because with a learning goal, a different reception process should be activated. With an information goal, the documentary should be processed in order to integrate the archaeological and historical educational contents into existing prior knowledge structures as is the case with expository material (Wolfe & Mienko, 2007). However, the present results showed no significant effect of reception goals on acquisition of close and distant facts.

Because the mean scores for knowledge acquisition were all at a medium level, floor and ceiling effects do not constitute an explanation for this lack of significance. Another possible reason for the absence of the influence of reception goals on the narrative distance effect may be that the instructions did not work out at all. But this explanation can also be ruled out because the instructions actually did show effects, although not for the narrative distance effect, but for AIME (see below). Another explanation the reception goals did not influence the narrative distance effect may be that the instruction to learn was not strong or persistent enough to overcome the narrative dominance. It may be that the subjects actually tried to switch to an expository processing mode, but forgot the instruction and abandoned this mode during reception in favor of a narrative processing mode, because the narrative dominance was too strong compared to the reception goal created by the instruction. This interpretation implies that the recipients are passive viewers influenced and guided by the media presentations. But this is not

in line with cognitivistic and constructivistic positions regarding the viewers as active recipients.

Therefore this explanation may not be valid either.

In the Capacity Model of Children's Comprehension of Educational Content on

Television, Fisch (2000) also postulates influences of prior knowledge structures on the

processing of narrative and educational contents. Prior knowledge which refers to the

educational contents should reduce the demands of processing these contents, because they can

then be assimilated more easily into these memory structures. But it seems that prior knowledge

not only facilitates the processing of educational contents, it rather is, to a certain extent, a

necessary condition for processing educational contents independently of the narrative

dominance. And this is exactly what seems to have happened in the present study. It is likely that

subjects did not have a sufficiently established prior knowledge structure they could have tied

the educational contents to. This could well be the case, because first, experts studying

archaeology, history, or ethnology were excluded from the study and, second, archaeology and

ancient historical periods, as presented in the archaeological television documentaries used, are

underrepresented in the German canon of education as well as in archaeological television

documentaries. Therefore, the only memory structure the subjects could have tied information to

were the narrative structure and other (personal) narrative memories triggered by it. But close

facts could better be tied to them than distant facts, leading again to a narrative dominance

running counter to the influence of reception goals on the narrative distance effect. It is possible

that the recipients voluntarily switched to the narrative processing mode, because they realized

that they did not have sufficient prior knowledge and that, hence, more knowledge could be

successfully acquired with the narrative than with the expository processing mode. The narrative

could have provided or triggered other, more elaborated memory structures subjects could tie

more educational facts to. Taken together, one can say that this insignificant result does not

necessarily contradict the Capacity Model of Children's Comprehension of Educational Content

on Television (Fisch, 2000), but could not confirm expository processing with hybrid

documentary formats either. This has to be done by conducting similar analyses, using additional

subjects with better elaborated prior knowledge structures.

Another assumption tested in this study was that subjects with the reception goal of

informing themselves should invest more mental effort (AIME) than subjects with the reception

goal of entertaining themselves. This could be confirmed by the present results. These results are

in line with previous findings by Salomon and Leigh (1984). Interestingly, they also found that

although subjects with an information goal invested more mental effort than subjects with an

entertainment goal, there was no advantage of these subjects with regard to knowledge

acquisition. The same was the case with the study by Salomon and Leigh (1984). They directly

manipulated receptions goals for processing a narrative on television or written in text. Children

either watched or read for fun or watched or read to see how much they could learn from it. The

results showed no influence of reception goals on recall, but children actually invested more

AIME when watching or reading to learn compared to children who watched or read for fun. All

this indicates that perceived AIME does not automatically lead to a successful processing of

educational contents in a documentary, which is necessary for knowledge acquisition. This

seems to depend on the successful processing and integration of the new educational content

with prior knowledge structures, as discussed above. Because this was presumably not possible

for the subjects of the presents study, those subjects with a learning purpose did show higher

AIME but no better knowledge acquisition than the subjects with an entertainment purpose. This

finding, together with the results from Salomon and Leigh (1984), therefore disqualifies AIME

as an indicator of knowledge acquisition with narrative, hybrid, and maybe also with expository

material. Transportation, on the other hand, seems to be a good indicator of knowledge

acquisition with narrative material as well as with narratively processed hybrid documentary

formats, because both knowledge acquisition (especially acquisition of facts that are close to the

narrative plotline) and transportation are direct consequences of a fluent processing of the narrative.

Finally, it was attempted to replicate the findings from the first study of the present work with regard to personal variables enhancing transportation. The present results show that the effects of imagery ability as well as prior involvement in the film topics could be replicated, whereas trait absorption in this study failed to reach significance. This is a rather unexpected result, because only slight alterations were made in the present study, compared to the first study. Subjects were instructed to have reception goals; only two of the three films, and only film versions with re-enactments were used. All other circumstances were the same as in the first study. It is unclear how re-enactments, reception goals and film content could have influenced the previously examined relationship between trait absorption and transportation in such a way. Imagery ability as well as prior involvement in the film topics accounted for 30.8% of variance in transportation. This is even slightly more than in the first study, although absorption in the present study was not a significant predictor and re-enactments were not included in the analysis. This time, imagery ability was the best predictor of transportation, which again highlights the role of imagery in transportation.

In summary, it can be concluded that the experience of transportation goes along with knowledge acquisition during the processing of archaeological television documentaries and possibly also narratives and other hybrid documentary formats. Narrative dominance could be found in hybrid documentary formats as well. Facts close to the narrative plotline were better learned than distant facts. Voluntary resource allocation to the educational contents by the reception goal to inform oneself did not reduce this narrative distance effect, which may be due to the recipients' insufficiently developed prior knowledge structures and not to a failed manipulation or a passive dependence of the recipients on the narrative dominance. The Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000) could

therefore be confirmed with hybrid documentary formats; additionally, it was discovered that to

overcome narrative dominance, a certain amount of prior knowledge seems to be necessary.

Furthermore, AIME was disqualified as an indicator of successful knowledge acquisition with

hybrid documentary formats, whereas the important role of imagery ability for transportation

with hybrid documentary formats could again be demonstrated.

9. Control Study: Ruling Out Alternative Explanations for the Narrative Distance Effect

The previously described knowledge acquisition test used in the second study contains items asking for archaeological and historical educational facts close and distant to the narrative plotline in the archaeological television documentaries. Results of the second study revealed that close facts are learned better than distant facts. It could be argued that this is due to prior differences in difficulty of the items and not to the narrative distance effect, as is postulated in the second study. Hence, it has to be tested in this control study whether these two types of items differ significantly in difficulty independent of the narrative distance.

9.1 Method

Subjects

In the control study, $n = 20$ subjects, 9 (45.0%) male and 11 (55.0%) female, aged between 18 and 33 years ($M = 24.40$; $SD = 3.52$) participated. None of the subjects knew some or all of the material from television, had already visited the archaeological excavations presented in the material, or had participated in the two main studies of the present work. As in the first and second study, all subjects were native speakers and did not study archaeology, history or ethnology.

Material

From the two archaeological television documentary used in the second study, the scenes corresponding to the items from the knowledge acquisition test were cut out to destroy the narrative structure of the films. These extracts were then arranged in random order separately for each film. In between the single scenes, seven seconds of black screen were placed, respectively. When arranging the single presentations for the subjects, attention was paid to presenting the block with the random scenes of the film about Hattusa and the block with the random scenes of the film about Tucume in random order as well so that half the subjects first watched the scenes

about Hattusa and then about Tucume and the other half of the subjects watched the scenes the

other way round. The whole presentation was approximately six minutes long.

Design

The present study used a within-subject design in which all subjects watched both the

extracts from the documentary about Hattusa and the extracts from the documentary about

Tucume, and answered knowledge acquisition tests about both films. Paired *t*-tests were

calculated using an alpha level of .20 because the null hypothesis was tested.

Measures

The same knowledge acquisition tests as in the second study were used.

Procedure

The subjects were invited to the laboratory at the Knowledge Media Research Center in

groups of three to five persons and seated in front of a computer equipped with headsets and

flanked by dividing walls. They were given written instructions for the first block of scenes and

after that started the presentation of the first block on the computer. After they had watched all

scenes of the first block they were asked to answer the knowledge acquisition test. The tests were

handed out to them by the experimenter. After all subjects had finished the knowledge

acquisition test about the scenes of the first documentary, the experimenter collected the tests

and subjects were handed out the written instruction for the second block of scenes. After having

read the instruction, subjects started the presentation of the second block of scenes and

afterwards answered the corresponding knowledge acquisition test handed out by the

experimenter.

9.2 Results

Results showed no significant differences in difficulty between items asking for close and

distant facts, neither for the close ($M = .64$; $SD = .24$) and distant ($M = .62$; $SD = .21$) items

about the Hattusa film ($p = .68$), nor for the close ($M = .65$; $SD = .23$) and distant ($M = .63$; $SD =$

.20) items about the Tucume film ($p = .60$), and nor about the close ($M = .65$; $SD = .23$) and distant ($M = .63$; $SD = .18$) items across both films ($p = .61$). All items collapsed across both films had a mean difficulty of $M = .60$ ($SD = .20$) and can therefore be considered to be of medium difficulty.

9.3 Discussion

The results of the control study showed no significant differences in difficulty for items asking for close and distant facts, neither for the items about the film about Hattusa nor for the items about the film about Tucume. The interpretation of the results of the second study as narrative distance effect is therefore confirmed, because the control study could rule out the alternative explanation that this effect may be due to prior existing differences in the difficulty of the items of the knowledge acquisition tests. In summary, it can be concluded that items of the knowledge acquisition tests in the second study were accurately chosen to test the narrative distance effect independently of item difficulty.

10. General Discussion

It was analyzed in two studies and one control study how narrative elements, identified as differentiating factors between classical and hybrid documentary formats, influence the processing, experience, and acquisition of knowledge with hybrid documentary formats. This was done exemplary using archaeological television documentaries containing a narrative structure (dramatization) and visualizing re-enactments (fictionalization). Because of the narrative structure, it was assumed that narrative processing and experiences would occur, as is described in the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000), in the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008) and in the Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002).

The first study examined how visualizing fictionalization in the form of re-enactments, which were identified as one of four narrative elements in hybrid documentary formats, influences the narrative experience of transportation as well as perceived similarity between the past and the viewers' own culture. Results revealed that archaeological television documentaries are able indeed to cause the narrative experience of transportation, although transportation presumably occurs in an alleviated way compared to full-fledged narratives: Only a medium level of transportation was examined, although the study was conducted in an immersive cinema hall. Watching the documentaries at home in front of a TV screen and with distracting surrounding would therefore have evoked even lower levels of transportation. A direct comparison between these narrative experiences in hybrid documentary formats and the narrative experiences in full-fledged narratives was not the aim of the present work either. This has to be done in future studies.

Additionally, results showed that fictionalizations in the form of re-enactments with concrete pictures do enhance transportation. Viewers watching archaeological television documentaries with re-enactments are more transported during the reception than viewers

watching the archaeological television documentaries without re-enactments. This is in line with the Transportation Imagery Model of Narrative Persuasion (Green & Brock, 2002) and the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008) and highlights the role of visual imagery for transportation with audio-visual media: Visual images are important for generating a mental model of the narrative about the past culture, and when provided by the medium, a more fluent processing of the documentary and thus a more fluent generation of the mental models is allowed, leading to higher levels of transportation. This is also supported by the result that imagery ability is a significant predictor of transportation. But other ways in which re-enactments could contribute to the process of transportation can be imagined as well: The re-enactments may have facilitated transportation also by enhancing interest and attention or emotional engagement. Which of these mechanisms actually lead to this result or whether a combination of all three mechanisms accounts for the findings has to be analyzed more precisely in other future studies. Besides, results showed that visualizing fictionalizations in the form of re-enactments tend to enhance perceived similarity between the past and the viewers' own culture. This is presumably the case because visualizing people from the past culture enables the recipients to better identify their characteristics and therefore to better perceive similarities, which is an important predictor of identification – another narrative experience postulated by the Model of Narrative Comprehension and Engagement (Busselle & Bilandzic, 2008).

In summary, this study confirmed that narrative processing occurs in hybrid documentary formats with narrative structures (dramatization), eliciting the narrative experience of transportation and maybe other consequences of narrative processing as well. Moreover, fictionalizations in the form of visualizing re-enactments contribute to this type of processing and to the accompanied experience of transportation and also enhance perceived similarity between the past and the viewers' own culture, which is a predictor of identification.

The first study also discussed that more narrative instead of expository scenes and also higher quality of the narrative scenes could enhance transportation into the depicted past culture. But is this really desirable? An increase in narrative re-enactment scenes, for instance, may enable more transportation and stronger re-experiencing of past periods, but at the same time lead to a reduction in the amount of expository scenes. This, in turn, decreases the number of scientific historical considerations and explanations in the documentary that are prerequisites for understanding the conditions under which these past events took place (Stueber, 2002). Conclusions can be drawn rather easily from narrative re-enactments with regard to the character and emotions of a former person. But the mental world of persons from earlier times can hardly be recreated, because the viewers always take their own world knowledge and attitudes, the knowledge and attitudes of their current time period, into the narrative re-enactments. So there is a danger of misrepresenting the past by attributing one's own values and expectations to the persons from earlier times, when watching re-enactments or other forms of narrative presentation. According to Stueber (2002), narrative re-enactments do play an epistemically central role in historical explanations, because they allow us to sufficiently account for individual behavior, but as the only method utilized, they do not work with big cultural differences and they are not sufficient for historical narrations. Instead, to understand the behavior of persons from very different cultures and to construe a historical narration, re-enactments have to be supplemented by explanatory material about the basic cultural, economic, climatic, etc. conditions constituting the past period, as is done by the narrator and by experts in television documentaries. Therefore, using narrative elements in hybrid documentary formats and at the same time fulfilling an educational mandate requires a good balance between re-experiencing past periods and providing explanatory material.

The processing of hybrid documentary formats was analyzed in the second study. This study examined whether archaeological television documentaries containing narrative structures (dramatization) are actually processed as is described by the Capacity Model of Children's

Comprehension of Educational Content on Television (Fisch, 2000), addressing hybrid media presentations specifically. Results revealed that educational archaeological and historical facts that are close to the narrative plotline of the documentary are learned better than facts that are distant to this narrative plotline. This indicates a narrative processing mode instead of an expository processing mode and therefore narrative dominance within archaeological television documentaries with narrative structure and is therefore in line with the Capacity Model of Children's Comprehension of Educational Content on Television (Fisch, 2000). This was additionally supported by the control study which ruled out possible measurement problems.

The reception goal of informing oneself did not reduce the narrative distance effect in favor of an expository processing mode, and although viewers with the reception goal of informing themselves showed more AIME than viewers with the reception goal to entertain themselves, they did not show better knowledge acquisition. This is in line with Salomon and Leigh (1984), who found similar results: an influence of reception goals on AIME, but not on knowledge acquisition. In the present case, this can presumably be explained by the insufficiently developed prior knowledge structures the recipients could have tied the educational contents to during expository processing. By realizing that the expository prior knowledge structures were insufficiently developed, the recipients may have voluntarily abandoned the intended expository processing mode and may have switched to narrative processing because the narrative provided or evoked memory structures to which the recipients could tie at least the educational facts that were important to the processing of the narrative. This, in turn, caused the narrative distance effect even for recipients with a learning goal, who initially wanted to engage in expository processing.

Additionally, knowledge acquisition during the narrative processing of hybrid documentaries goes along with the narrative experience of transportation. Viewers with high transportation during the reception also showed higher knowledge acquisition one week after the reception than viewers with low transportation. This is supposed to be due to a common cause of

knowledge acquisition and transportation: the generation of mental models of the narrative during the narrative processing of the documentary.

In summary, the second study could confirm that narrative processing and narrative dominance occur during the reception of archaeological television documentaries with a narrative structure, because transportation goes along with knowledge acquisition, and facts close to the narrative plotline are learned better than facts distant to the narrative plotline. The failure to demonstrate expository processing by the recipients with a learning purpose indicates that such processing occurs not merely through a learning goal, but that there must also be prior knowledge structures which are at least as elaborated as the memory structures provided or triggered by the narrative for a person to engage in expository processing. If this is not the case, recipients will voluntarily (and maybe unconsciously) allocate their cognitive resources to the processing of the narrative. Nevertheless, the occurrence of expository processing of hybrid documentary formats has to be shown in future studies.

The results form studies I and II indicate that during the processing of hybrid documentary formats containing narrative structures, two types of processing can occur: narrative and expository processing. During narrative processing, mental models of the narrative are generated. If this is done fluently, the pleasant narrative experiences of transportation and identification occur, although partly in an alleviated way, compared to full-fledged narratives. The fluent processing is additionally facilitated by visual images provided by the media presentation (e.g., by using fictionalizations in the form of re-enactments). While generating mental models of the narrative, special attention is paid to the educational facts that are important to the development of the story, because this information has to be updated constantly in order to create coherent mental models. The information close to the narrative plotline is therefore elaborated better and stored in memory more strongly than other educational contents. The narrative in the hybrid documentary format thereby provides an episodic memory structure

or triggers other narrative (personal) memories the important educational facts can be tied to, independently of prior knowledge structures about the educational topic.

During expository processing, more mental effort is invested and it is attempted to connect all educational contents equally well to prior knowledge structures about the educational topic. Expository processing can be activated by the explicit or the implicit reception goal to learn, the latter being evoked by specific types of media that are usually used to learn or inform oneself, such as texts compared to audio-visual media, as has been analyzed by Salomon and Leigh (1984), for example. Another precondition for expository processing seems to be that a particular amount of prior knowledge has to be established. It may be that a prior knowledge structure as at least developed as the episodic or narrative memory structures provided or triggered by the narrative in the hybrid documentary format is required for a person to engage in expository instead of narrative processing. Hence, which processing style is applied to the hybrid documentary format depends on different things such as the reception goals of the recipients, their prior knowledge structures about the educational topic, and the episodic and narrative memory structures provided or triggered by the narrative structure of the hybrid documentary format.

All in all, the relationship between some of the identified narrative elements, narrative experiential processes, and narrative dominance in hybrid documentary formats could be partly clarified by the present work. Contrary to prior research, the confound between narrativity and content could be avoided in the present work by varying narrativity (fictionalization) within the same material. The results are also independent of content because three documentaries about different archaeological contents were used and type of content did not influence the results in neither of the analyses.

But there are also limitations: Strictly speaking, the results hold only for the particular type of hybrid documentary formats used in the present work. Therefore, processing of, and experience and knowledge acquisition with other hybrid documentary formats have to be

examined in future studies. Other narrative elements such as emotionalization and personalization were not addressed in the present work. These issues therefore have to be analysed with regard to their role in hybrid documentary formats in future studies as well. Additionally, considering the narrative elements examined in the present work, there are also other forms of dramatization and fictionalization as well as other types of re-enactments used in hybrid documentary formats.

It is not clear either whether the implementation of dramatization and fictionalization in hybrid documentary formats as is done in the archaeological television documentaries examined is best or whether there are other better ways to attain the desired type of processing, amount of narrative experience, and knowledge acquisition of particular educational facts. This has to be analyzed in future studies.

Another future study should be conducted to confirm expository processing with hybrid documentary formats by showing that the reception goal to learn reduces the narrative distance effect. This could not be shown by the present work, presumably because of the lack of sufficiently established prior knowledge structures. A future study addressing this issue should therefore analyse both, subjects with low and subjects with high prior knowledge about the educational topics in question. It would also be interesting whether the narrative experience of transportation is reduced when abandoning narrative in favor of expository processing of the hybrid documentary formats.

Considering the results from the first study, which compared documentaries that caused different levels of transportation, and the second study together, one can argue that media presentations enabling high transportation (e.g., with fictionalizations), even when not intended to educate, should also be better for knowledge acquisition than media presentations causing only low transportation (e.g., without fictionalization). But this may only hold for narratives and for hybrid media presentations with a narrative structure, which are processed narratively. The present work cannot make conclusions on whether narrative processing of hybrid documentary

formats is better for knowledge acquisition than expository processing and neither on whether knowledge acquisition is better with hybrid or classical documentary formats.

Additionally, acquiring knowledge of educational facts may not be the one and only pedagogical goal. The question remains open whether narrative elements, besides their potential to enhance narrative processing and narrative experience as well as knowledge acquisition of particular educational facts, are pedagogically valid for documentary formats intended to educate. Classical educational psychology, on the one hand, recommends the use of an expository format because it is univocal and non-dialectic, its major focus being either descriptive or explanatory (Avraamidou & Osborne, 2009). These characteristics are assumed to enable maximum learning outcomes by using an optimal amount of cognitive resources which are directed mainly at the central learning issues. By doing so, optimal knowledge acquisition should be achieved.

On the other hand, converse tendencies in educational psychology can also be observed, mainly referring to education in schools (but also to other pedagogical situations; for instance, informal learning settings such as mass media and museums are conceivable). Folino (2001), for instance, addresses classroom science and argues that storytelling is a vehicle by which the who, what, where, when, and how of science can be provided. She refers to the storyteller Syd Lieberman who suggested that it is the story that provides the nail on which to hang the facts. Students remember facts when they are tied to a story, and a good story will stay in their minds long after the class is over. Its memory will stay in their imagination and have more meaning than just isolated facts and lists of events.

Martin and Miller (1988) argued that the problem with traditional school science is that it is presented in an expository rather than in a narrative mode – the oldest way of teaching. They say that classical expository science books do not offer stories which can help children to make associations and to perceive relationships among the facts they are studying – a potential that isolated expository facts do not convey. By using expository presentation style the body of

scientific knowledge is reduced to a corpse. But with the profound connectivity that is inherent in a storytelling mode, scientific knowledge can be kept alive to children. These two positions are in line with the present results that narrative structure provides an episodic memory structure educational facts that are important for the development of the narrative can be tied to and which relates them to each other. The present work indicates that this seems to be especially beneficial for learners with low prior knowledge.

Martin and Brouwer (1991) formulated that another goal of pedagogy is to draw the content of the lesson into the life-world of the students. They argue that this can be achieved by using narratives because they are essential ingredients of human cognition. Narratives do not convince by logical reasoning like expository presentations, but by evoking images and creating empathy between the recipient and the narrative. This is in line with the present results that narrative structure causes the pleasant narrative experience of transportation. Narratives thereby provide or cue episodes in the students' memories on which they can "hang" scientific principles. In this way, narratives may be a useful vehicle for exploring the epistemological dimension of science and thereby bridge the gap between school learning and experience. This is in line with the assumption of the present work that narrative structures also trigger personal or other narrative memory structures educational facts in the narrative can be tied to (and thus stored in memory over a longer period of time) – especially for recipients with low prior knowledge. Additionally, narratives can be used in science education in different ways. By telling narratives, one can share his or her personal enjoyment and motivation in science, or teachers and scientists can share their lived experiences. This may be a reason why narratives are often perceived as interesting and pleasant, which may also explain the narrative dominance observed in the present study. In expressive writing, i.e., students writing down their own narratives relating to scientific topics, narratives can also fulfill an autobiographic or reflective purpose for the students. Furthermore, Martin and Brouwer (1991) postulate another goal of science education: Students should acquire a more authentic understanding of science in all its

diversity, which the authors think can also be managed by using narratives. The history of science therefore plays an important role in teaching students about the limitations and the nature of science and the tentative nature of scientific knowledge. Teaching science from a purely rational perspective like in classical science education connotes a sense of certainty, proof and even authority. Narratives and anecdotes about the life and research of a scientist into which educational facts can be easily implemented can help temper this view with the illustration of doubt, uncertainty and intellectual struggle that are part of science. Martin and Brouwer (1991) admit that the traditional mode in school science is a necessary way to encounter science, but on the other hand, they also state that it should not be the only way.

Millar and Osborne (1998) propose that narratives are one of the most powerful and pervasive ways of communicating ideas and emphasize the value of narratives in making ideas coherent, memorable and meaningful. They argue that there is considerable value and advantage in presenting the knowledge content of the curriculum as a set of explanatory stories and provide several reasons for this: First, narratives emphasize that understanding is not of single propositions, or concepts, but of inter-related sets of ideas which, taken together, provide a framework for understanding an area of experience. In this way, they agree with Martin and Miller (1988). Second, narratives help ensure that the main ideas of the curriculum are not obscured by the weight of scientific detail. Pupils and teachers are then able to see more clearly where ideas are leading, and how they are inter-related. Communicating science as explanatory stories and thereby concentrating on the essential structure of explanations and giving a general overview instead of scientific details would allow for a significant reduction of content and at the same time give space to other kinds of activity and learning. But care should be taken to avoid too many seductive non-scientific details (e.g., Garner et al., 1989). Finally, understanding explanatory stories is also necessary for interpreting, and appropriately responding to, media reports of science-related issues and science-related decisions in everyday settings. Millar and Osborne (1998) additionally state that using narratives in science education will often involve the

use of illustrative practical work to allow pupils to see the phenomena being discussed, and to help them develop an understanding of the key ideas. They think that it is of course important that young people see these stories not as a given knowledge, but as the product of sustained inquiry by individuals working in social and historical contexts, thereby being in line with Martin and Brouwer (1991).

Wilson (2002) also proposes that science should be taught through narratives. He refers to prior research when claiming that facts presented in narratives, as opposed to lists, are much easier to remember, that facts evoking intense emotions are quickly and easily stored in memory, and that well-told narratives are a great way to tie emotions to facts.

But narrativity, on the other hand, can also bear risks. Machill et al. (2007), for instance, mention (i) oversimplification through personalization and emotionalization, (ii) a thematic imbalance through the inclusion of more soft news with a human touch to the disadvantage of socially relevant or scientific topics, and (iii) a tendency to exaggerate and to be self-referential, which would lead to a displacement of other types of journalistic communication (reporting, commentary, advice, etc.) and which would be to the disadvantage of the variety of various topics and forms of presentation and perspectives. This implies that when using narratives in formal and informal science education, this should be done with caution, bearing in mind the mechanisms of the narrative elements that influence processing, experience, and knowledge acquisition in different ways.

In summary, one can conclude there are different theoretical pedagogical positions, and that whether and which narrative elements in which practical form are optimally used depends on one's educational goals. Knowledge about the narrative elements and understanding of the cognitive and emotional processing of hybrid documentary formats, as is explained by the present work can help decide how to design documentary formats according to a particular educational goal.

Summary

The present work about the processing and experience of, and knowledge acquisition with hybrid documentary material addresses a widely neglected field of research, which is nevertheless very important with respect to formal and informal learning. This thesis picks up current changes in the documentary genre such that a highly topical and contentious issue is addressed. The present work identifies narrative elements (dramatization, emotionalization, personalization, fictionalization) as making the difference between classical and hybrid documentary formats. These narrative elements are also suitable to understand the different processing styles (narrative processing, expository processing) occurring in hybrid documentary formats. By analyzing the influences of two of the narrative elements on processing, experience, and knowledge acquisition, further insights are gained into the way hybrid documentary formats are processed, thereby also confirming existing theoretical models and showing that these models can be applied to hybrid documentary formats as well. Dramatization in hybrid documentary formats enables narrative processing and the pleasant narrative experiences of transportation in addition to expository processing, which is further facilitated by fictionalization. A dominance of narrative processing over expository processing has been shown as well. During narrative processing, mental models of the narrative are created, educational contents that are important to the development of the narrative are better attended to and remembered than other educational contents that are more distant to the narrative. Educational contents are connected within the narrative, thus providing an episodic memory structure, and the narrative also evokes personal or other narrative memories the educational contents can be tied to as well. During expository processing, mental models are created, too, but not about the narrative but about the educational topic. Thereby, all educational facts are equally well attended to and connected to prior knowledge structures, if available. The narrative dominance may be overcome by the explicit and implicit reception goal to learn, given that a particular amount of prior knowledge structures about the educational topics is already established. In this case,

expository processing instead of narrative processing would occur. Besides these insights into

the processing of hybrid documentary formats provided by the present studies, the question

whether the particular types of narrative elements causing and facilitating narrative processing,

narrative experience and narrative-based knowledge acquisition are pedagogically valid for

documentary formats remains open. Several pedagogical positions have been assumed

concerning this issue, and whether and which narrative elements in which practical form are

optimally used depends on one's educational goals. Knowledge about the narrative elements and

understanding of the cognitive and emotional processing of hybrid documentary formats, as is

explained by the present work can help decide how to design documentary formats according to

a particular educational goal.

Zusammenfassung

Die vorliegende Arbeit zu Verarbeitung, Erleben und Wissenserwerb mit hybriden

dokumentarischen Formaten behandelt ein zum großen Teil vernachlässigtes Forschungsgebiet,

das nichtsdestotrotz sehr bedeutend für formelles und informelles Lernen ist. Mit dem

Aufgreifen von derzeitigen Veränderungen im dokumentarischen Genre wird ein hoch aktuelles

und umstrittenes Thema adressiert. Die vorliegende Arbeit identifiziert narrative Elemente

(Dramatisierung, Emotionalisierung, Personalisierung, Fiktionalisierung), die den Unterschied

zwischen klassischen und hybriden dokumentarischen Formaten ausmachen und die dabei helfen

die unterschiedlichen Verarbeitungsprozesse (narrative Verarbeitung, expositorische

Verarbeitung), die bei der Rezeption von hybriden dokumentarischen Formaten stattfinden zu

verstehen. Indem der Einfluss von zwei der narrativen Elemente auf die Verarbeitung, die

Erfahrung und den Wissenserwerb mit hybriden dokumentarischen Formaten untersucht wurde,

konnten Einblicke in die kognitive Verarbeitung von hybriden dokumentarischen Formaten

gewonnen, bestehende theoretische Modelle bestätigt und die Anwendbarkeit dieser Modelle auf

hybride dokumentarische Formate gezeigt werden. Dramatisierung in hybriden

dokumentarischen Formaten ermöglicht zusätzlich zu einer expositorischen auch eine narrative

Verarbeitung und die genussreiche narrative Erfahrung der Transportation. Fiktionalisierung

verstärkt dies. Es besteht außerdem eine Dominanz der narrativen Verarbeitung über die

expositorische Verarbeitung. Während der narrativen Verarbeitung werden mentale Modelle der

Geschichte erstellt und die Lerninhalte, die für die Entwicklung der Geschichte bedeutsam sind

werden stärker beachtet und erinnert als andere Lerninhalte, die weniger stark an die Geschichte

gebunden sind. Die Lerninhalte werden innerhalb der Geschichte miteinander verknüpft, wobei

eine episodische Gedächtnisstruktur gebildet wird und außerdem aktiviert die Geschichte

persönliche und andere narrative Gedächtnisinhalte und die die Lerninhalte zusätzlich geknüpft

werden können. Während der expositorischen Verarbeitung werden auch mentale Modelle

erstellt, aber nicht über die Geschichte, sondern über die Lernthematik. Dabei werden alle

Lerninhalte gleich stark beachtet und an Vorwissensstrukturen angeknüpft, falls diese vorhanden sind. Die narrative Dominanz kann durch das explizite oder implizite Rezeptionziel lernen zu wollen und wenn ein bestimmter Umfang an Vorwissensstrukturen über die Lernthematik bereits etabliert ist, überwunden werden. In diesem Fall wird expositorisch, anderenfalls narrativ verarbeitet. Neben diesen Einblicken in die Verarbeitung von hybriden dokumentarischen Formaten, die durch die vorliegenden Studien gewonnen werden konnten, lässt die vorliegende Arbeit die Frage offen, ob die einzelnen narrativen Elemente, die die narrative Verarbeitung, das narrative Erleben und auch den narrations-basierten Wissenserwerb ermöglichen und fördern, pädagogisch gesehen für dokumentarische Formate auch zulässig sind. Diesbezüglich existieren unterschiedliche theoretische pädagogische Positionen und ob und welche narrativen Elemente in welcher praktischen Form optimalerweise genutzt werden sollten, hängt von den pädagogischen Zielen der Lehrenden ab. Das in dieser Arbeit dargelegte Wissen um die narrativen Elemente und die kognitive und emotionale Verarbeitung von hybriden dokumentarischen Formaten kann dabei helfen zu entscheiden, wie dokumentarische Formate entsprechend einem bestimmten pädagogischen Ziel gestaltet werden müssen.

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Appendices

Appendix A: Description of the Television Series and the Three Episodes Used as Research

        Material

ZDF Expedition: Versunkene Metropolen

      The television documentary series *ZDF Expedition: Versunkene Metropolen* (in English:

ZDF Expedition: Lost Metropolises) consists of three episodes, each dealing with one lost city in

particular: Piramesse, a lost Egyptian mega city which Pharao Ramses II. declared his seat of

governance in 1269 B.C. Hattusa, center of lordship of the Hittites in the 2nd millennium B.C.;

and the Peruvian pyramid city Tucume, in which the first mighty pyramid was build around 1100

AD. In all three documentaries, the history of the rise and fall of these cities is reconstrued by

means of archaeological and historical evidence. These educational contents are therefore more

or less close to the narrative plotline.

      Operation Piramesse – Ramses' verschollene Megacity is about the rise and fall of

Piramesse – the capital of Ramses II. Ramses II built Piramesse at the Pelusic Nile branch and

made it his place of governance. About 300 000 inhabitants lived on more than 30km^2. In

Piramesse, Ramses II had temples, obelisks, and statues built, some of which were up to 30m

high and which were supposed to last until eternity. Because of the geographical position at the

Nile branch, Piramesse became a lively trading metropolis and port. Ramses II also built up

Piramesse to an important military base. Thousands of soldiers, charioteers, and archers as well

as hundreds of horses were based in the city. Ramses II reigned the land for 66 years – longer

than any other Pharaoh. He fought battles, e.g., with the Hittites, to expand his dominion. With

the Hittites, in the end, he signed the first treaty of peace in history. But as Ramses II died,

Piramesse also declined. Within 200 years, the former flourishing city decayed. The Pelusic Nile

branch silted up more and more, and within a short period of time the entire region around

Piramesse desiccated. The important place of governance became a ghost city and the following

dynasty needed another center of power. Therefore, the new sovereigns decided to deconstruct the mighty buildings and statues of Ramses II to transport them through the desert to Tanis at the Tanitic Nile branch 30km away from Piramesse, and to build them up again at the new place – a mighty deed to rescue the residents and the honor of their dead Pharaoh.

Brennpunkt Hattusa – Machtzentrale der Hethiter is about the rise and fall of Hattusa, the capital of the Hittites. The Empire of the Hittites reached mainly from today's Anatolia to Syria and was one of the big empires exercising power in the middle east in the 2nd millennium B.C, besides Babylon, Assyria, and Egypt. The Hittites had immigrated to Anatolia in the 3rd millennium B.C. already. They built their capital in the mountains, and therefore the city was hard to reach. While other metropolises in ancient times were often built at main trading routes or navigable rivers, Hattusa was located far away from the next river and at the end of a long valley on top of a steep plateau. Because of this geographical position and because the Hittites build a special thick wall with high defense towers around the city, Hattusa was practically impregnable. The Hittites developed a sophisticated water delivery system which enabled them to obtain water from the surrounding mountain springs and to store it within the city walls in big reservoirs so that they could be autarkic for at least one year in times of peace and in times of war alike. There were approximately 50.000 people living in Hattusa. They believed in gods and in the brotherhood of all Hittites. They had strict rules they had to follow with regard to social living and religion. They had to swear loyalty to the gods and to their sovereign. These rules were written down in cuneiform tablets. The Hittites also had a big, draconic, and well developed military system which they used for defense and also to enlarge their dominion. They fought, for instance, with the Egyptians with whom, in the end, they signed the first treaty of peace in history. But there were also riots within the brotherhood of the Hittites. Conflicts between the sovereign and his uncle who also demanded the throne, split the Hittite society and nearly lead to civil war. This may be one of various reasons why Hattusa got lost. Economic reasons may have played a role as well: The Hittites sacrificed their best animals and tons of

food during their cultic rituals. Finally, climatic changes could have lead to the decline of the city. A series of drought periods occured. The residents of Hattusa starved and had to leave the dying city in the end to settle somewhere else. There is also evidence for a devastating fire. Especially the royal buildings burned down, which had previously been emptied and evacuated. Hence, the Hittites may have wanted not to leave anything to depredators after their departure.

Tatort Tucume – Pyramidenstadt in Peru is about the rise and fall of Tucume, a pyramid place in the north of Peru. The Lambayeque people build the first pyramid in this place around 1100 AD, with which their national hero Naymlap constituted the dynasty of Tucume. This was the beginning of an all-time building boom. The pyramids were a widely visible symbol of power. Altogether, there are 250 pyramids in the Lambayeque valley, which comprises three metropolises: Pampa Grande, Batan Grande, and Tucume. Generations of chieftains lived in Tucume in the palatial buildings on top of the pyramids. Around 1460, the Inca conquered Tucume and integrated it into their empire. From then on, Tucume was no longer a center of power but only one of many provincial places in the empire of which Cuzco was the capital. By allowing the Lambayeque to continue their cultic rituals, the Inca could avoid resistance against the integration. The new Inca governor held a tight reign over the residents. He collected high taxes, moved into the palatial buildings on the biggest pyramid, and extended them. In honor of his god Inti, he had a temple built as well as an audience hall and storerooms. He established a big administrative machinery which run like clockwork. But around 1500 AD, the pyramid place declined. There are several reasons for this: There may have been natural disasters like droughts and floods caused by El Niño which softened the pyramids, but there is also evidence that the decline of Tucume is associated with another historical event in 1532 – the Spanish invasion under the command of Franzisco Pizarro. Through long-distance trade over Panama, the Spanish king got to know about the gold deposits of Peru. He sent Franzisco Pizarro to investigate this. As Pizarro arrived, he robbed, murdered, and tortured mercilessly. As the Inca governor of Tucume heard about this, he became very frightened and asked for the help of the gods by

sacrificing 119 humans in ritual ceremonies. But heavenly help failed to appear. They set fire to

their buildings and pyramids in a ritual action to clean this place before they escaped.

Appendix B: Experimental Conditions in Study I

Hattusa:

Scene with re-enactment in the experimental condition (left) and scene without re-enactment in

the control condition (right) at time 06:09:22

Audio track: "In jener Zeit lebten vermutlich weit über 50000 Menschen in der Metropole.

Immer wieder bedrohten innere Unruhen das Staatsgefüge. Für den amtierenden

König Grund genug, seinen Palast mit einer Extramauer [06:09:22] einfrieden zu

lassen. Obwohl seine Lage auf einer Bergkuppe den Komplex vom Rest der Stadt

abschirmte."

Piramesse:

Scene with re-enactment in the experimental condition (left) and scene without re-enactment in the control condition (right) at time 34:40:12

Audio track: "Meter für Meter zogen die Bewohner von Piramesse die zahllosen Denkmäler des Stadtgründers [34:40:12] über Land – immer weiter nach Westen bis an den neuen, Tanitischen Arm des Nil. Der Treck durch Hitze und Sand, eine Plackerei, die Übermenschliches abverlangte. Die Hoffnung auf eine sichere Zukunft und der Glaube an den Schutz der Götter versetzte eine ganze Stadt. So gelang es, das Erbe Ramses des Großen doch noch für die Ewigkeit zu retten. Es muss Jahre gedauert haben, bis alle Teile in Tanis montiert waren. Doch dann glänzte die frisch gekürte Residenz wie ein zweites Piramesse."

Tucume:

Scene with re-enactment in the experimental condition (left) and scene without re-enactment in the control condition (right) at time 07:12:16

Audio track: "Immer nach der Maisernte begann im Lambayeque-Tal die Saison des

Pyramidenbaus. Heerscharen [07:12:16] von Bauern machten sich gemeinsam ans

Werk. Wie am Fließband fertigten sie Abermillionen von Lehmziegeln – die

Menge für einen einzigen Tempelturm. Form und Größe der Ziegel variierten –

von brotähnlichen bis hin zu lang-rechteckigen Exemplaren. Bevor die brennende

Sonne die so genannten Adoben aushärtete, drückten die Männer unterschiedliche

Zeichen in den feuchten Lehm – je nach Arbeitsgruppe oder Stifter."

Appendix C: Expert Rating about Filmic Quality of the Films in the Different Experimental

        Conditions in Study I

Three experts of film production, film analysis, and film reception in the field of documentaries

and fictional movies judged the three documentaries used in the study with regard to six

production aspects and five content aspects of filmic quality on a bipolar scale. Production

aspects of filmic quality were fluency of scene transitions, repetition of pictures, aesthetics, text-

picture-difference, informational content of pictures, and support of narration by pictures.

Content aspects of filmic quality were objectivity, authenticity, emotionality, informational

density, and mediation of insights into the past period.

The three raters agreed with 96.97% on all eleven aspects that the film about Hattusa did not

differ between the experimental condition and the control condition with regard to filmic quality.

They reached an agreement of 93.94% with regard to the two versions of the film about

Piramesse and they agreed with 93.94% that the experimental condition and the control

condition of the film about Tucume did not differ in filmic quality. Over all films there was an

agreement of 94.95%.

Appendix D: Questionnaires Used in Study I (Exemplary for the Film about Hattusa)

A

Vpn-Nr.

Die folgenden Aussagen betreffen bestimmte Bereiche des Wahrnehmens und Erlebens. Diese können erfahrungsgemäß bei verschiedenen Personen sehr unterschiedlich ausgeprägt sein. Bitte geben Sie zu jeder Aussage an, in welchem Ausmaß Sie für Ihre Person zutrifft oder nicht zutrifft. Hierfür sind fünf Antwortmöglichkeiten vorgegeben, bitte entscheiden Sie sich bei jeder Aussage für eine davon. Behalten Sie dabei im Kopf, daß es letztlich keine richtigen oder falschen Antworten gibt.

trifft   nicht   etwas   teilweise   überwiegend   völlig   zu

1. Manchmal empfinde und erlebe ich die Dinge wie in meiner Kindheit.   0----1----2----3----4

2. Wortgewandte oder poetische Sprache kann mich stark beeindrucken.   0----1----2----3----4

3. Filme, Fernsehspiele oder Theaterstücke können mich so mitreißen, daß ich mich und alles um mich herum vergesse und die Geschichte erlebe als wäre sie Realität und ich an ihr beteiligt.   0----1----2----3----4

4. Wenn ich ein Bild betrachte und danach wegsehe, habe ich manchmal ein Abbild davon, fast so als ob ich das Bild selber noch sehen würde.   0----1----2----3----4

5. Manchmal habe ich das Gefühl, mein Geist könnte die ganze Welt umfangen.   0----1----2----3----4

6. Ich beobachte gerne, wie Wolken ihre Form verändern.   0----1----2----3----4

7. Wenn ich will kann ich tagträumen oder mir manche Dinge so lebhaft vorstellen, daß sie meine Aufmerksamkeit fesseln wie ein guter Film oder eine gute Geschichte.   0----1----2----3----4

8. Ich glaube, daß ich weiß, was manche Leute meinen, wenn sie von mystischen Erfahrungen sprechen.   0----1----2----3----4

9. Ich kann manchmal aus mir heraustreten und einen völlig anderen Seinszustand erfahren.   0----1----2----3----4

10. Stoffe - wie etwa Wolle, Sand oder Holz - erinnern mich manchmal an Farben oder Musik.   0----1----2----3----4

11. Manchmal erlebe ich die Dinge als wären sie doppelt wirklich.   0----1----2----3----4

	trifft	nicht	etwas	teilweise	überwiegend	völlig	zu

12. Wenn ich Musik höre kann sie mich so gefangen nehmen, daß ich nichts anderes mehr beachte.
0----1----2----3----4

13. Wenn ich will kann ich mir vorstellen, daß mein Körper so schwer ist, daß ich ihn nicht mehr bewegen kann, selbst wenn ich es wollte.
0----1----2----3----4

14. Oft kann ich die Gegenwart einer anderen Person spüren, noch bevor ich sie (oder ihn) wirklich sehe oder höre.
0----1----2----3----4

15. Das Knistern und die Flammen eines Holzfeuers regen meine Phantasie an.
0----1----2----3----4

16. Manchmal ist es mir möglich, mich völlig in Natur oder Kunst zu versenken, als ob sich mein ganzer Bewußtseinszustand vorübergehend verändert hätte.
0----1----2----3----4

17. Verschiedene Farben haben unterschiedliche und besondere Bedeutungen für mich.
0----1----2----3----4

18. Es kann mir passieren, daß ich während einer Routineaufgabe in Gedanken abschweife und dabei vergesse was ich tue, bis ich nach einigen Minuten bemerke, daß ich die Aufgabe erledigt habe.
0----1----2----3----4

19. Ich kann mich manchmal an bestimmte Erfahrungen aus meiner Vergangenheit so lebhaft und klar erinnern, als ob ich sie noch einmal durchleben würde.
0----1----2----3----4

20. Dinge, die anderen bedeutungslos erscheinen mögen, haben für mich oft einen Sinn.
0----1----2----3----4

21. Ich glaube, wenn ich in einem Stück eine Rolle spielen würde, könnte ich die Gefühle des dargestellten Charakters tatsächlich empfinden und für diese Zeit als die betreffende Person wirklich leben, mich selbst und das Publikum vergessend.
0----1----2----3----4

22. Meine Gedanken erscheinen oft nicht als Worte sondern als Bilder.
0----1----2----3----4

		trifft	nicht	etwas	teilweise	überwiegend	völlig	zu

23. Ich kann mich oft an kleinen Dingen erfreuen (wie die Farbe von Seifenblasen, oder ähnliches).
0----1----2----3----4

24. Wenn ich mir Orgelmusik oder andere kraftvolle Musik anhöre, fühle ich mich manchmal wie in die Luft gehoben.
0----1----2----3----4

25. Manchmal kann ich Geräusche in Musik verwandeln, wenn ich auf eine bestimmte Art hinhöre.
0----1----2----3----4

26. Einige meiner lebhaftesten Erinnerungen werden von Düften und Gerüchen geweckt.
0----1----2----3----4

27. Manche Musik erinnert mich an Bilder oder sich ändernde Farbmuster.
0----1----2----3----4

28. Oft weiß ich was jemand sagen wird, noch bevor er (oder sie) es ausspricht.
0----1----2----3----4

29. Ich habe oft eine Art "körperliche Erinnerungen", z.B. wenn ich geschwommen bin, kann ich danach immer noch das Gefühl haben im Wasser zu sein.
0----1----2----3----4

30. Der Klang einer Stimme kann so faszinierend für mich sein, daß ich einfach nur zuhöre.
0----1----2----3----4

31. Manchmal fühle ich die Anwesenheit einer Person, die physisch überhaupt nicht da ist.
0----1----2----3----4

32. Manchmal kommen mir Gedanken und Bilder ohne das geringste Hinzutun.
0----1----2----3----4

33. Ich finde, daß verschiedene Gerüche verschiedene Farben haben.
0----1----2----3----4

34. Ein Sonnenuntergang kann mich tief berühren.
0----1----2----3----4

VVIQ

Liebe Versuchsperson,

Es geht um deine visuelle Vorstellungskraft. Auf den folgenden 4 Seiten ist jeweils kurz eine Szene beschrieben, die du dir bildlich vorstellen sollst. Darunter findest du jeweils 4 weitere Spezifizierungen der Szene, die du dir ebenfalls vorstellen sollst. Lasse dir dabei so viel Zeit wie du möchtest. Gib bitte jeweils danach an, wie deutlich und lebhaft du dir die spezifischen Szenen vorstellen konntest. Markiere dazu die zutreffende Aussage mit einem Kreuz.

1.   Denke an einen Verwandten oder Freund(in) von dir, den/die du regelmäßig siehst
        (der/die aber im Moment nicht anwesend ist) und sieh dir das Bild genau an, das du
        vor deinem geistigen Auge hast.

-       Den exakten Umriss des Gesichtes, des Kopfes, der Schultern und des Körpers.

        ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
        ☐   Undeutlich und dämmrig
        ☐   Mäßig deutlich und lebhaft
        ☐   Deutlich und einigermaßen lebhaft
        ☐   Völlig deutlich und so lebhaft wie normales Sehen

-       Charakteristische Stellungen des Kopfes, Körperhaltung, etc.

        ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
        ☐   Undeutlich und dämmrig
        ☐   Mäßig deutlich und lebhaft
        ☐   Deutlich und einigermaßen lebhaft
        ☐   Völlig deutlich und so lebhaft wie normales Sehen

-       Die genaue Bewegungsweise, Länge der Schritte etc. beim Gehen.

        ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
        ☐   Undeutlich und dämmrig
        ☐   Mäßig deutlich und lebhaft
        ☐   Deutlich und einigermaßen lebhaft
        ☐   Völlig deutlich und so lebhaft wie normales Sehen

-       Die unterschiedlichen Farben der gewöhnlich getragenen Kleidung.

        ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
        ☐   Undeutlich und dämmrig
        ☐   Mäßig deutlich und lebhaft
        ☐   Deutlich und einigermaßen lebhaft
        ☐   Völlig deutlich und so lebhaft wie normales Sehen

2.   Denke an eine aufgehende Sonne. Sieh dir das Bild genau an, das du vor deinem geistigen
      Auge hast.

   -   Die Sonne steigt über dem Horizont auf, hinein in einen diesigen Himmel.

          □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
          □   Undeutlich und dämmrig
          □   Mäßig deutlich und lebhaft
          □   Deutlich und einigermaßen lebhaft
          □   Völlig deutlich und so lebhaft wie normales Sehen

   -   Der Himmel klart auf und umgibt die Sonne mit Bläue.

          □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
          □   Undeutlich und dämmrig
          □   Mäßig deutlich und lebhaft
          □   Deutlich und einigermaßen lebhaft
          □   Völlig deutlich und so lebhaft wie normales Sehen

   -   Wolken. Ein Sturm zieht auf, mit Blitzschlägen.

          □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
          □   Undeutlich und dämmrig
          □   Mäßig deutlich und lebhaft
          □   Deutlich und einigermaßen lebhaft
          □   Völlig deutlich und so lebhaft wie normales Sehen

   -   Ein Regenbogen erscheint.

          □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
          □   Undeutlich und dämmrig
          □   Mäßig deutlich und lebhaft
          □   Deutlich und einigermaßen lebhaft
          □   Völlig deutlich und so lebhaft wie normales Sehen

3.   Denke an die Vorderansicht eines Ladens, in den du häufig gehst. Sieh dir das Bild
        genau an, das du vor deinem geistigen Auge hast.

-   Das gesamte Äußere des Ladens von der gegenüberliegenden Seite der Straße.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Eine Schaufensterauslage einschließlich Farben, Formen und Details der einzelnen
    Gegenstände, die zum Verkauf angeboten werden.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Du stehst am Eingang. Die Farbe, die Form und die Details der Tür.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Du betrittst den Laden und gehst zum Ladentisch. Die Verkäuferin bedient dich. Geld
    wechselt die Hände.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

4.   Denke an eine Landschaft mit Bäumen, Bergen und einem See. Sieh dir das Bild genau an, das du vor deinem geistigen Auge hast.

- Die Umrisse der Landschaft.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

- Die Farbe und Form der Bäume.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

- Die Farbe und Form des Sees.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

- Ein kräftiger Wind bläst durch die Bäume und über den See, Wellen verursachend.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

Du wirst im Anschluss an diese Fragen einen Film sehen, in dem es um die Hauptstadt der Hethiter geht, die im 2. Jahrtausend v. Chr. in Anatolien gelebt haben.

Bitte beurteile die Hethiter, die damals lebten auf den folgenden Dimensionen, indem du ein Kreuz an die entsprechende Stelle setzt.

Für mich sind die Hethiter…

wichtig	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	unwichtig
langweilig	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	interessant
relevant	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	irrelevant
aufregend	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	nicht aufregend
bedeuten mir nichts	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	bedeuten mir viel
sympathisch	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	unsympathisch
faszinierend	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	banal
wertlos	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	wertvoll
involvierend	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	nicht involvierend
unnötig	☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐	nötig

B

Vpn-Nr. ☐

Fragebogen Rezeptionserleben Film

Bitte kreuzen Sie die Zahl an, die Ihrem Erleben während des Filmschauens am besten entspricht.

1. **Während ich den Film sah, konnte ich mir die dargestellte historische Epoche gut vorstellen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

2. **Während ich den Film sah, habe ich auf Dinge geachtet, die im Raum um mich herum vorgingen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

3. **Ich konnte mich selbst in der historischen Epoche sehen, die in dem Film dargestellt wird.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

4. **Während des Anschauens fühlte ich mich gedanklich in die dargestellte historische Epoche hineingezogen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

5. **Als der Film zu Ende war, fiel es mir leicht, wieder an etwas anderes zu denken.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

6. **Ich wollte wissen, wie der Film weiter geht.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

7. **Die im Film dargestellte historische Epoche hat mich emotional berührt.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

8. **Ich habe mir auch über andere Aspekte dieser historischen Epoche Gedanken gemacht.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

9. **Meine Gedanken schweiften ab, während ich den Film sah.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

10. Die Ereignisse in der dargestellten historischen Epoche sind für meinen Alltag von Bedeutung.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

11. Die Ereignisse in der dargestellten historischen Epoche haben mein Leben verändert.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

12. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Menschen der dargestellten historischen Epoche.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

13. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Örtlichkeiten der dargestellten historischen Epoche.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

14. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Lebensbedingungen in der dargestellten historischen Epoche.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

15. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Aktivitäten der Menschen in der dargestellten historischen Epoche.

<div align="center">trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu</div>

Bitte beurteile die dargestellte Epoche der Hethiter auf folgenden Dimensionen:

□---------□---------□---------□---------□---------□---------□

klein   groß

□---------□---------□---------□---------□---------□---------□

schwach   stark

□---------□---------□---------□---------□---------□---------□

krank   gesund

□---------□---------□---------□---------□---------□---------□

klar   verschwommen

□---------□---------□---------□---------□---------□---------□

feig   mutig

□---------□---------□---------□---------□---------□---------□

leer   voll

□---------□---------□---------□---------□---------□---------□

traurig   froh

□---------□---------□---------□---------□---------□---------□

seicht   tief

□---------□---------□---------□---------□---------□---------□

gut   schlecht

□---------□---------□---------□---------□---------□---------□

leise   laut

☐---------☐---------☐---------☐---------☐---------☐---------☐

frisch   abgestanden

☐---------☐---------☐---------☐---------☐---------☐---------☐

schön   hässlich

☐---------☐---------☐---------☐---------☐---------☐---------☐

gespannt   gelöst

☐---------☐---------☐---------☐---------☐---------☐---------☐

eckig   rund

☐---------☐---------☐---------☐---------☐---------☐---------☐

aktiv   passiv

☐---------☐---------☐---------☐---------☐---------☐---------☐

kalt   warm

☐---------☐---------☐---------☐---------☐---------☐---------☐

rau   glatt

☐---------☐---------☐---------☐---------☐---------☐---------☐

sanft   wild

☐---------☐---------☐---------☐---------☐---------☐---------☐

nahe   entfernt

☐---------☐---------☐---------☐---------☐---------☐---------☐

liberal   konservativ

☐---------☐---------☐---------☐---------☐---------☐---------☐

hoch   tief

□---------□---------□---------□---------□---------□---------□

feucht   trocken

□---------□---------□---------□---------□---------□---------□

veränderlich   stetig

□---------□---------□---------□---------□---------□---------□

jung   alt

Hast du den Film, den du gerade gesehen hast bereits vorher schon gekannt?

☐	☐	☐
ja	teilweise	nein

Warst du selber schon einmal bei den Ausgrabungsstätten, die du im Film gesehen hast?

☐	☐
ja	nein

Demographische Daten

Alter:_____   **Geschlecht**:   ☐ männlich   ☐ weiblich

Beruf / Studienfach:_____

Bitte beurteile <u>deine eigene</u> Gesellschaft in der <u>heutigen Zeit</u> auf folgenden Dimensionen:

□---------□---------□---------□---------□---------□---------□
klein   groß

□---------□---------□---------□---------□---------□---------□
schwach   stark

□---------□---------□---------□---------□---------□---------□
krank   gesund

□---------□---------□---------□---------□---------□---------□
klar   verschwommen

□---------□---------□---------□---------□---------□---------□
feig   mutig

□---------□---------□---------□---------□---------□---------□
leer   voll

□---------□---------□---------□---------□---------□---------□
traurig   froh

□---------□---------□---------□---------□---------□---------□
seicht   tief

□---------□---------□---------□---------□---------□---------□
gut   schlecht

□---------□---------□---------□---------□---------□---------□
leise   laut

□---------□---------□---------□---------□---------□---------□
frisch   abgestanden

□---------□---------□---------□---------□---------□---------□
schön   hässlich

□---------□---------□---------□---------□---------□---------□
gespannt   gelöst

□---------□---------□---------□---------□---------□---------□
eckig   rund

□---------□---------□---------□---------□---------□---------□
aktiv   passiv

□---------□---------□---------□---------□---------□---------□
kalt   warm

□---------□---------□---------□---------□---------□---------□
rau   glatt

□---------□---------□---------□---------□---------□---------□
sanft   wild

□---------□---------□---------□---------□---------□---------□
nahe   entfernt

□---------□---------□---------□---------□---------□---------□
liberal   konservativ

□---------□---------□---------□---------□---------□---------□
hoch   tief

☐─────────☐─────────☐─────────☐─────────☐─────────☐─────────☐

feucht   trocken

☐─────────☐─────────☐─────────☐─────────☐─────────☐─────────☐

veränderlich   stetig

☐─────────☐─────────☐─────────☐─────────☐─────────☐─────────☐

jung   alt

Appendix E: Questionnaires Used in Study II (Exemplary for the Film about Hattusa)

A

Vpn-Nr.

Die folgenden Aussagen betreffen bestimmte Bereiche des Wahrnehmens und Erlebens. Diese können erfahrungsgemäß bei verschiedenen Personen sehr unterschiedlich ausgeprägt sein. Bitte geben Sie zu jeder Aussage an, in welchem Ausmaß Sie für Ihre Person zutrifft oder nicht zutrifft. Hierfür sind fünf Antwortmöglichkeiten vorgegeben, bitte entscheiden Sie sich bei jeder Aussage für eine davon. Behalten Sie dabei im Kopf, daß es letztlich keine richtigen oder falschen Antworten gibt.

trifft   nicht   etwas   teilweise   überwiegend   völlig   zu

1. Manchmal empfinde und erlebe ich die Dinge wie in meiner Kindheit.
0----1----2----3----4

2. Wortgewandte oder poetische Sprache kann mich stark beeindrucken.
0----1----2----3----4

3. Filme, Fernsehspiele oder Theaterstücke können mich so mitreißen, daß ich mich und alles um mich herum vergesse und die Geschichte erlebe als wäre sie Realität und ich an ihr beteiligt.
0----1----2----3----4

4. Wenn ich ein Bild betrachte und danach wegsehe, habe ich manchmal ein Abbild davon, fast so als ob ich das Bild selber noch sehen würde.
0----1----2----3----4

5. Manchmal habe ich das Gefühl, mein Geist könnte die ganze Welt umfangen.
0----1----2----3----4

6. Ich beobachte gerne, wie Wolken ihre Form verändern.
0----1----2----3----4

7. Wenn ich will kann ich tagträumen oder mir manche Dinge so lebhaft vorstellen, daß sie meine Aufmerksamkeit fesseln wie ein guter Film oder eine gute Geschichte.
0----1----2----3----4

8. Ich glaube, daß ich weiß, was manche Leute meinen, wenn sie von mystischen Erfahrungen sprechen.
0----1----2----3----4

9. Ich kann manchmal aus mir heraustreten und einen völlig anderen Seinszustand erfahren.
0----1----2----3----4

10. Stoffe - wie etwa Wolle, Sand oder Holz - erinnern mich manchmal an Farben oder Musik.
0----1----2----3----4

11. Manchmal erlebe ich die Dinge als wären sie doppelt wirklich.
0----1----2----3----4

| | trifft | nicht | etwas | teilweise | überwiegend | völlig | zu |

12. Wenn ich Musik höre kann sie mich so gefangen nehmen,
daß ich nichts anderes mehr beachte.   0----1----2----3----4

13. Wenn ich will kann ich mir vorstellen, daß mein Körper
so schwer ist, daß ich ihn nicht mehr bewegen kann,
selbst wenn ich es wollte.   0----1----2----3----4

14. Oft kann ich die Gegenwart einer anderen Person spüren,
noch bevor ich sie (oder ihn) wirklich sehe oder höre.   0----1----2----3----4

15. Das Knistern und die Flammen eines Holzfeuers regen
meine Phantasie an.   0----1----2----3----4

16. Manchmal ist es mir möglich, mich völlig in Natur oder
Kunst zu versenken, als ob sich mein ganzer Bewußt-
seinszustand vorübergehend verändert hätte.   0----1----2----3----4

17. Verschiedene Farben haben unterschiedliche und beson-
dere Bedeutungen für mich.   0----1----2----3----4

18. Es kann mir passieren, daß ich während einer Routine-
aufgabe in Gedanken abschweife und dabei vergesse was
ich tue, bis ich nach einigen Minuten bemerke, daß ich
die Aufgabe erledigt habe.   0----1----2----3----4

19. Ich kann mich manchmal an bestimmte Erfahrungen aus
meiner Vergangenheit so lebhaft und klar erinnern,
als ob ich sie noch einmal durchleben würde.   0----1----2----3----4

20. Dinge, die anderen bedeutungslos erscheinen mögen,
haben für mich oft einen Sinn.   0----1----2----3----4

21. Ich glaube, wenn ich in einem Stück eine Rolle spielen
würde, könnte ich die Gefühle des dargestellten
Charakters tatsächlich empfinden und für diese Zeit
als die betreffende Person wirklich leben, mich selbst
und das Publikum vergessend.   0----1----2----3----4

22. Meine Gedanken erscheinen oft nicht als Worte sondern
als Bilder.   0----1----2----3----4

| | trifft | nicht | etwas | teilweise | überwiegend | völlig | zu |

23. Ich kann mich oft an kleinen Dingen erfreuen (wie
     die Farbe von Seifenblasen, oder ähnliches).   0----1----2----3----4

24. Wenn ich mir Orgelmusik oder andere kraftvolle Musik
     anhöre, fühle ich mich manchmal wie in die Luft
     gehoben.   0----1----2----3----4

25. Manchmal kann ich Geräusche in Musik verwandeln, wenn
     ich auf eine bestimmte Art hinhöre.   0----1----2----3----4

26. Einige meiner lebhaftesten Erinnerungen werden von
     Düften und Gerüchen geweckt.   0----1----2----3----4

27. Manche Musik erinnert mich an Bilder oder sich
     ändernde Farbmuster.   0----1----2----3----4

28. Oft weiß ich was jemand sagen wird, noch bevor er
     (oder sie) es ausspricht.   0----1----2----3----4

29. Ich habe oft eine Art "körperliche Erinnerungen",
     z.B. wenn ich geschwommen bin, kann ich danach immer
     noch das Gefühl haben im Wasser zu sein.   0----1----2----3----4

30. Der Klang einer Stimme kann so faszinierend für mich
     sein, daß ich einfach nur zuhöre.   0----1----2----3----4

31. Manchmal fühle ich die Anwesenheit einer Person, die
     physisch überhaupt nicht da ist.   0----1----2----3----4

32. Manchmal kommen mir Gedanken und Bilder ohne das
     geringste Hinzutun.   0----1----2----3----4

33. Ich finde, daß verschiedene Gerüche verschiedene
     Farben haben.   0----1----2----3----4

34. Ein Sonnenuntergang kann mich tief berühren.   0----1----2----3----4

VVIQ

Liebe Versuchsperson,

Es geht um deine visuelle Vorstellungskraft. Auf den folgenden 4 Seiten ist jeweils kurz eine Szene beschrieben, die du dir bildlich vorstellen sollst. Darunter findest du jeweils 4 weitere Spezifizierungen der Szene, die du dir ebenfalls vorstellen sollst. Lasse dir dabei so viel Zeit wie du möchtest. Gib bitte jeweils danach an, wie deutlich und lebhaft du dir die spezifischen Szenen vorstellen konntest. Markiere dazu die zutreffende Aussage mit einem Kreuz.

1.   Denke an einen Verwandten oder Freund(in) von dir, den/die du regelmäßig siehst
        (der/die aber im Moment nicht anwesend ist) und sieh dir das Bild genau an, das du
        vor deinem geistigen Auge hast.

        -   Den exakten Umriss des Gesichtes, des Kopfes, der Schultern und des Körpers.

                □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
                □   Undeutlich und dämmrig
                □   Mäßig deutlich und lebhaft
                □   Deutlich und einigermaßen lebhaft
                □   Völlig deutlich und so lebhaft wie normales Sehen

        -   Charakteristische Stellungen des Kopfes, Körperhaltung, etc.

                □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
                □   Undeutlich und dämmrig
                □   Mäßig deutlich und lebhaft
                □   Deutlich und einigermaßen lebhaft
                □   Völlig deutlich und so lebhaft wie normales Sehen

        -   Die genaue Bewegungsweise, Länge der Schritte etc. beim Gehen.

                □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
                □   Undeutlich und dämmrig
                □   Mäßig deutlich und lebhaft
                □   Deutlich und einigermaßen lebhaft
                □   Völlig deutlich und so lebhaft wie normales Sehen

        -   Die unterschiedlichen Farben der gewöhnlich getragenen Kleidung.

                □   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
                □   Undeutlich und dämmrig
                □   Mäßig deutlich und lebhaft
                □   Deutlich und einigermaßen lebhaft
                □   Völlig deutlich und so lebhaft wie normales Sehen

2. Denke an eine aufgehende Sonne. Sieh dir das Bild genau an, das du vor deinem geistigen Auge hast.

- Die Sonne steigt über dem Horizont auf, hinein in einen diesigen Himmel.

    ☐ Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐ Undeutlich und dämmrig
    ☐ Mäßig deutlich und lebhaft
    ☐ Deutlich und einigermaßen lebhaft
    ☐ Völlig deutlich und so lebhaft wie normales Sehen

- Der Himmel klart auf und umgibt die Sonne mit Bläue.

    ☐ Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐ Undeutlich und dämmrig
    ☐ Mäßig deutlich und lebhaft
    ☐ Deutlich und einigermaßen lebhaft
    ☐ Völlig deutlich und so lebhaft wie normales Sehen

- Wolken. Ein Sturm zieht auf, mit Blitzschlägen.

    ☐ Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐ Undeutlich und dämmrig
    ☐ Mäßig deutlich und lebhaft
    ☐ Deutlich und einigermaßen lebhaft
    ☐ Völlig deutlich und so lebhaft wie normales Sehen

- Ein Regenbogen erscheint.

    ☐ Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐ Undeutlich und dämmrig
    ☐ Mäßig deutlich und lebhaft
    ☐ Deutlich und einigermaßen lebhaft
    ☐ Völlig deutlich und so lebhaft wie normales Sehen

3.   Denke an die Vorderansicht eines Ladens, in den du häufig gehst. Sieh dir das Bild
        genau an, das du vor deinem geistigen Auge hast.

-   Das gesamte Äußere des Ladens von der gegenüberliegenden Seite der Straße.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Eine Schaufensterauslage einschließlich Farben, Formen und Details der einzelnen
    Gegenstände, die zum Verkauf angeboten werden.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Du stehst am Eingang. Die Farbe, die Form und die Details der Tür.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

-   Du betrittst den Laden und gehst zum Ladentisch. Die Verkäuferin bedient dich. Geld
    wechselt die Hände.

    ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
    ☐   Undeutlich und dämmrig
    ☐   Mäßig deutlich und lebhaft
    ☐   Deutlich und einigermaßen lebhaft
    ☐   Völlig deutlich und so lebhaft wie normales Sehen

4.   Denke an eine Landschaft mit Bäumen, Bergen und einem See. Sieh dir das Bild genau

        an, das du vor deinem geistigen Auge hast.

   -   Die Umrisse der Landschaft.

            ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
            ☐   Undeutlich und dämmrig
            ☐   Mäßig deutlich und lebhaft
            ☐   Deutlich und einigermaßen lebhaft
            ☐   Völlig deutlich und so lebhaft wie normales Sehen

   -   Die Farbe und Form der Bäume.

            ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
            ☐   Undeutlich und dämmrig
            ☐   Mäßig deutlich und lebhaft
            ☐   Deutlich und einigermaßen lebhaft
            ☐   Völlig deutlich und so lebhaft wie normales Sehen

   -   Die Farbe und Form des Sees.

            ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
            ☐   Undeutlich und dämmrig
            ☐   Mäßig deutlich und lebhaft
            ☐   Deutlich und einigermaßen lebhaft
            ☐   Völlig deutlich und so lebhaft wie normales Sehen

   -   Ein kräftiger Wind bläst durch die Bäume und über den See, Wellen verursachend.

            ☐   Überhaupt kein Bild - du „weißt" nur, dass du daran denkst
            ☐   Undeutlich und dämmrig
            ☐   Mäßig deutlich und lebhaft
            ☐   Deutlich und einigermaßen lebhaft
            ☐   Völlig deutlich und so lebhaft wie normales Sehen

Du wirst im Anschluss an diese Fragen einen Film sehen, in dem es um die Hauptstadt der Hethiter geht, die im 2. Jahrtausend v. Chr. in Anatolien gelebt haben.

Bitte beurteile die Hethiter, die damals lebten auf den folgenden Dimensionen, indem du ein Kreuz an die entsprechende Stelle setzt.

Für mich sind die Hethiter…

wichtig   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   unwichtig

langweilig   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   interessant

relevant   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   irrelevant

aufregend   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   nicht aufregend

bedeuten mir nichts ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   bedeuten mir viel

sympathisch   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   unsympathisch

faszinierend   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   banal

wertlos   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   wertvoll

involvierend   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   nicht involvierend

unnötig   ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐ ----- ☐   nötig

Instruktion

Im Folgenden wirst du einen ca. 30-minütigen Film sehen. Dieser handelt von Hattusa, der Hauptstadt der Hethiter. Es ist also ein archäologisch-geschichtlicher Film, wie du ihn dir vielleicht auch zuhause im Fernsehen anschauen würdest.

Bei unserer Studie geht es darum, dass Filme mit verschiedenen Zielen angesehen werden können. Uns interessiert dabei vor allem das Ziel sich zu unterhalten. Schau dir den folgenden Film deshalb mit dem Ziel an, dich zu unterhalten.

Viel Spaß dabei!

Instruktion

Im Folgenden wirst du einen ca. 30-minütigen Film sehen. Dieser handelt von Hattusa, der Hauptstadt der Hethiter. Es ist also ein archäologisch-geschichtlicher Film, wie du ihn dir vielleicht auch zuhause im Fernsehen anschauen würdest.

Bei unserer Studie geht es darum, dass Filme mit verschiedenen Zielen angesehen werden können. Uns interessiert dabei vor allem das Ziel sich zu informieren. Schau dir den folgenden Film deshalb mit dem Ziel an, dich zu informieren.

Viel Erfolg dabei!

B

Fragebogen Rezeptionserleben Film

Bitte kreuzen Sie die Zahl an, die Ihrem Erleben während des Filmschauens am besten entspricht.

1. **Während ich den Film sah, konnte ich mir die dargestellte historische Epoche gut vorstellen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

2. **Während ich den Film sah, habe ich auf Dinge geachtet, die im Raum um mich herum vorgingen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

3. **Ich konnte mich selbst in der historischen Epoche sehen, die in dem Film dargestellt wird.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

4. **Während des Anschauens fühlte ich mich gedanklich in die dargestellte historische Epoche hineingezogen.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

5. **Als der Film zu Ende war, fiel es mir leicht, wieder an etwas anderes zu denken.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

6. **Ich wollte wissen, wie der Film weiter geht.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

7. **Die im Film dargestellte historische Epoche hat mich emotional berührt.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

8. **Ich habe mir auch über andere Aspekte dieser historischen Epoche Gedanken gemacht.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

9. **Meine Gedanken schweiften ab, während ich den Film sah.**

    trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

10. Die Ereignisse in der dargestellten historischen Epoche sind für meinen Alltag von Bedeutung.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

11. Die Ereignisse in der dargestellten historischen Epoche haben mein Leben verändert.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

12. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Menschen der dargestellten historischen Epoche.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

13. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Örtlichkeiten der dargestellten historischen Epoche.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

14. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Lebensbedingungen in der dargestellten historischen Epoche.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

15. Während ich den Film sah, hatte ich eine lebhafte Vorstellung von den Aktivitäten der Menschen in der dargestellten historischen Epoche.

        trifft gar nicht zu   1 - - 2 - - 3 - - 4 - - 5 - - 6 - - 7   trifft voll zu

Fragen zur Rezeptionsarbeit

Wie sehr hast du versucht, den Film zu verstehen?

☐ --------------- ☐ --------------- ☐ --------------- ☐ --------------- ☐

gar nicht   sehr

Wie stark hast du dich während des Films konzentriert?

☐ --------------- ☐ --------------- ☐ --------------- ☐ --------------- ☐

gar nicht   sehr

Wie aufmerksam hast du den Film verfolgt?

☐ --------------- ☐ --------------- ☐ --------------- ☐ --------------- ☐

gar nicht   sehr

Wie viel Gedankenarbeit hast du während des Films aufgewendet?

☐ --------------- ☐ --------------- ☐ --------------- ☐ --------------- ☐

gar nicht   sehr

Hast du den Film, den du gerade gesehen hast bereits vorher schon gekannt?

       ☐   ☐   ☐

       ja   teilweise   nein

Warst du selber schon einmal bei den Ausgrabungsstätten, die du im Film gesehen hast?

       ☐   ☐

       ja   nein

Demographische Daten

Alter:_____   **Geschlecht**:   ☐ männlich   ☐ weiblich

Beruf / Studienfach:_____

Appendix F: Items and Answers of the Knowledge Acquisition Tests Used in Study II

Knowledge acquisition test about the film about Hattusa

Close items with re-enactments:

Die Zerstörung welcher Metropole durch die Hethiter verschaffte diesen nachhaltigen Prestigegewinn?

- die Zerstörung Babylons

Was bedeutete der Zwist zwischen König Mursili III und Prinz Hattusili für die Bevölkerung?

- der Zwist treibt den Staat an den Rand eines Bürgerkrieges / innere Unruhen

Um die Gemeinschaft zusammen zu halten mussten die Menschen von Hattusa zwei Gehorsams- bzw. Treueschwüre ableisten. Jeweils wem gegenüber?

- den obersten Gottheiten

- dem König

Close items without re-enactments:

Welchen Vorteil hatte die geographische Lage Hattusas?

- die Fläche inmitten des endlosen Berggürtels war praktisch uneinnehmbar

Welche bauliche Besonderheit wies die Grenzmauer von Hattusa auf, um ihr mehr Stabilität zu geben?

- Kammern mit Lagen von Steinsplittern und Erde gefüllt

Woher bezogen die Menschen in Hattusa ihr Wasser? Wie bewahrten sie es innerhalb der Stadt auf und für wie lange reichte der Wasservorrat?

- aus Quellen in den umliegenden Bergen

- in Reservios / künstlichen Seen / Teichen

- mindestens 1 Jahr

Distant items with re-enactments:

Welche drei Kriterien mussten die Pferde im Militär der Hethiter erfüllen?

- nicht schwach / stark / kräftig

- schnell

- ausdauernd

Welche Strafe erhielten Aufrührer im Militär der Hethiter?

- Blendung

In welcher verwandtschaftlichen Beziehung steht der General Prinz Hattusili zu König Muwatalli und in welcher zu dessen Nachfolger König Mursili III?

- Bruder von Muwatalli

- Onkel von Mursili III

Distant items without re-enactments:

Wofür waren die Löcher, die in die Felsbrocken des Untergrunds gebohrt wurden?

- für Holzstämme, eine Hilfskonstruktion, um das Baumaterial auch in entlegene Winkel zu schhaffen

Wie wurden die einzelnen Rohrstücke im Kanalisationssystem von Hattusa miteinander verbunden und aus welchem Material waren sie?

- da sich die Zylinder verjüngen, lassen sie sich zusammen stecken

- aus Ton

In welchen beiden heutigen Gegenden wurden die Keilschrifttafeln der Hethiter gefunden?

- Syrien

- Anatolien

Knowledge acquisition test about the film about Tucume

Close items with re-enactments:

Wie hieß die Hauptstadt des Inka-Reiches?

- Cuzco

Welche geschickte Taktik verwendeten die Inka, um den Widerstand der Einheimischen von Tucume bei der Eingliederung der Stadt in das Inka-Reich zu verhindern?

- sie duldeten neben ihren eigenen Ritualen das kultische Brauchtum der Lambayeque

Wie sah die Infrastruktur zwischen den einzelnen Inka-Städten aus und welchen damaligen besonderen Ausbildungsberuf bringst du damit in Verbindung?

- weit verzweigtes Wegenetz

- speziell ausgebildete Läufer / Boten / Kuriere

Close items without re-enactments:

Welche beiden Arten von Naturkatastrophen bringen die Menschen im Lambayeque-Tal immer wieder in lebensbedrohliche Situationen? Welches davon traf um 1100 n.Chr. die Fürstenresidenz Batan Grande und welches zwang das Volk der Moche, ihre Hauptstadt aufzugeben und woanders zu siedeln?

- lang anhaltende Dürren / Sandstürme

- sintflutartige Regenfälle / Fluten

- überschwemmte eine Jahrhundertflut Batan Grande

- heftige Sandstürme überzogen das Gebiet und zwang das Volk der Moche …

Wieso stellten diese Naturkatastrophen für die Pyramiden im Lambayeque-Tal so eine große Gefahr dar?

- die ungebrannten Lehmziegel weichten auf und verformten sich und die Wunderwerke verloren and Stabilität

Welche Information über Peru weckte das Interesse der Spanier an diesem Land? Wie kamen die Spanier an diese Information? Und wie stellten sie sicher, dass diese Information richtig war?

- Kunde von den Goldschätzen Peru's

- durch den Fernhandel über Panama nach Europa

- mit einer Lizenz des Königs machte sich schon bald eine Expedition auf, das Land auszuspähen

Distant items with re-enactments:

Durch wen wurde das Amt des obersten Priesters besetzt, als die Lambayeque Tucume regierten?

- durch das adlige Oberhaupt, den Fürsten von Tucume / Priesterkönig

Wann begann in Tucume die Saison des Pyramidenbaus?

- immer nach der Maisernte

Durch welchen Zusatzstoff wurden die Ziegel der Pyramiden haltbarer gemacht?

- die Männer mischten der Erde Lamadung bei

Distant items without re-enactments:

Welche vier beliebten Delikatessen hielt der Küchenchef für den elitären Kreis bereit?

- Meeresfische

- Muscheln

- Lamafleisch

- Mais

Welche vier verschiedenen Überreste von Küchen konnten die Archäologen auf den Pyramiden ausgraben?

- Kohleöfen

- Pflanzensamen

- Tierknochen

- Teile von Kochtöpfen mit deutlichen Gebrauchsspuren

An welchen vier anderen Orten auf der Welt gibt es Pyramiden? Und an welchem dieser Orte stehen die ältesten Pyramiden?

- im mexikanischen Chichén Itzá

- in Ägypten

- in der sudanesischen Wüste

- Ur im heutigen Irak

- Ur ist der Prototyp

Appendix G: Questionnaire about the Understanding of the Entertainment Instruction in Study II

(Exemplary for the Film about Hattusa)

Vor der Filmpräsentation letzte Woche im Kino hast du folgende Instruktion zum Film gelesen:

Instruktion

Im Folgenden wirst du einen ca. 30-minütigen Film sehen. Dieser handelt von Hattusa, der Hauptstadt
der Hethiter. Es ist also ein archäologisch-geschichtlicher Film, wie du ihn dir vielleicht auch zuhause
im Fernsehen anschauen würdest.

Bei unserer Studie geht es darum, dass Filme mit verschiedenen Zielen angesehen werden können.
Uns interessiert dabei vor allem das Ziel sich zu unterhalten. Schau dir den folgenden Film deshalb
mit dem Ziel an, dich zu unterhalten.

Viel Spaß dabei!

Diese Instruktion kann offensichtlich unterschiedlich verstanden werden. Wie hast du diese
Instruktion <u>damals</u> vor dem Film verstanden?

□   den Film anschauen, um unterhalten zu werden

□   den Film anschauen, um sich anschließend darüber zu unterhalten

□   sonstiges: _____