Measuring the complexity of viewers' television news interpretation: Integration

GABI SCHAAP, RUBEN KONIG, KARSTEN RENCKSTORF
and FRED WESTER

Abstract

Although interpretation is often considered a vital factor in the effects of news, its conceptualization and operationalization have been problematic. In this study, interpretation is defined in terms of the structural attribute of complexity. In a previous contribution, one aspect of interpretive complexity, differentiation, was operationalized and measured to test the usefulness of the concept in news research. This follow-up study introduces a method for measuring and analyzing a second aspect of interpretive complexity: Integration. Whereas differentiation represents the broadness of interpretations, integration refers to the cohesiveness of interpretations. This contribution describes two dimensions of integration, called micro-integration and macro-integration, and attempts to test their utility by operationalizing and measuring them in a small-scale study (N = 19). Results illustrate that the method yields data that are helpful in systematically exploring and comparing how viewers interpret television news by assessing differences in cohesiveness. The merits of the concept and method and their use for the study of news effects are evaluated.

Keywords: television news, viewers' interpretation, interpretive complexity, differentiation, integration, Thought-Listing Technique

Introduction

Interpreting television news is a complex process; viewers are active receivers that use their personal and social knowledge and personal motivations to shape the content of a news message until it fits the viewer's purposes. The different ways in which they use their knowledge to construct an interpretation eventually affects the knowledge they accumulate, their understanding, and the attitudes they form on topics in the news. As differences in how people interpret the news at the moment they are watching may explain differences in these longer-term phenom-

ena, the interpretation of television news should be an important subject of mass media research (Schaap, Renckstorf and Wester, 2005; Schaap, Konig, Renckstorf, and Wester, 2005; Shapiro and Lang, 1991).

Because interpreting the news is a complex cognitive and affective process, it is not sufficient to measure only audience reproductions of predefined news facts (cf. Findahl, 1997, 1998; Giegler and Ruhrmann, 1990; Graber, 1984; Gunter, 2001; Höijer, 1989, 1998; Renckstorf and Wester, 2001; Robinson and Davis, 1990; Shapiro and Lang, 1991; Woodall, Davis and Sahin, 1983). Although said research has been, and still is, very fruitful, to do justice to the interpretive process alternative measurements are needed, preferably measurements that are conducted from an audience point of view, so that more comprehensive information is collected on the complete interpretation process. In earlier contributions, we proposed one such alternative: the concept of interpretive complexity. By assessing the degree to which the structure of interpretations is differentiated and integrated, interpretive complexity focuses on structural properties of news interpretations (Schaap, Renckstorf and Wester, 2005). It has been claimed that the degree to which interpretations are differentiated (elaborate) and integrated (cohesive) affects how and to what degree recipients remember and understand the news, as well as the nature of their opinions in the longer run.

In an earlier study, we attempted to operationalize and test the utility of a concept of differentiation for use in television news research (Schaap, Konig, Renckstorf, and Wester, 2005). Here, we focus on doing the same for integration, the second aspect of interpretive complexity. For a more elaborate discussion of the concepts and their origins, we refer to Schaap, Renckstorf and Wester (2005). Below, we present data from a small-scale study that are not intended to make claims about interpretive complexity in the empirical reality, but rather to serve as material to illustrate and test the usefulness of the method.

Interpretive complexity: Differentiation and integration

In this study project, the interpretation of a television news item is seen as a product of interpretive actions by the viewer and the outcome of a complex process in which a viewer tries to give meaning to the news. This interpretation can be seen as a cognitive structure which has a certain level of complexity. This structure consists, first, of the separate elements that are the most basic building blocks of interpretations, and second, of links between these elements. These two dimensions of complexity are called differentiation and integration, respectively. Differentiation refers to an interpretation's elaborateness, whereas integration re-

fers to its cohesiveness. Interpretations may differentiate between many or not so many different elements of an issue or event; simple interpretations contain a narrow range of information, representing a limited amount of ideas that are used to describe an issue, whereas more complex interpretations contain more information elements, suggesting a broad range of multiple alternative interpretations of the same issue. Furthermore, interpretations may, to a greater or lesser extent, integrate these separate elements into a cohesive whole; simple interpretations have fewer connections between information elements than complex interpretations. Differentiation constitutes only one aspect of complexity, for the interpretation of a news item can only be called more or less complex if the elaborateness has some level of cohesiveness as well. A person may use many elements, but fail to connect them in any meaningful way. Thus, such a person's interpretation may be highly differentiated, yet at the same time lack cohesiveness. Complex interpretations are both highly detailed and connect details into a cohesive whole.

In this contribution, the focus is on interpretive integration. There are two ways in which a viewer can connect elements. First, on a micro level, he or she may connect two individual elements. Second, on a macro level, many individual elements are implicitly or explicitly connected as they refer to broad socio-cultural categories. Below, we specify these two dimensions of integration, and in the next section we operationalize the concepts.

Micro-integration: Relational elements

A first way in which an interpretation shows cohesiveness is in the linking of individual elements. Based on James Spradley's (1979, 1980) definitions, in previous research we found that a number of broad categories of element types can be distinguished in television news interpretations (Schaap, Konig, Renckstorf, and Wester, 2005). Although every element that is used by people to describe aspects of reality represents some type of *semantic* relationship (that is, a very basic link between an aspect of reality and some small category, such as 'this four-legged wooden thing is a chair') we maintain that some of these relationships, and consequently some of these elements, are of a higher level of abstraction (Höijer, 1989; Luskin, 1987). These are elements that contain actual explicit relationships between two or more concrete elements. References to persons, places and events, and attributes of these things, for instance, are references to basic units, simply denoting things that are directly observable, concrete phenomena ('simple elements'), such as 'this is a chicken', or 'the chicken crossed the road'. References to the causes of an event are more abstract, as they link two simple units with a feature

that is not directly observable ('relational elements'). 'This caused the chicken to cross the road' links two phenomena: 'this' and poultry behavior in terms of a cause (cf. Al-Menayes and Sun, 1993; Findahl and Höijer, 1985; Schroder, Driver, and Streufert, 1967). If an interpretation contains more elements with an explicit relation, its 'micro-integration' is higher.

Viewers use their prior knowledge of an issue to construct an interpretation of a television news item. Therefore, we may expect that viewers with different knowledge of issues or events use different elements in interpreting such issues and event, including relational elements. Likewise, the degree to which one is inclined to perceive causes and effects, for instance, may also be dependent on prior knowledge.

Macro-integration: Domains of elements

On a higher level of abstraction, interpretations can contain groups of elements that belong to one or several broad socio-cultural categories, called domains (cf. Judd and Krosnick; 1989; Schaap, Renckstorf, and Wester, 2005; Spradley, 1979, 1980; Wahldahl, 1998). A domain is a category in which aspects of reality are grouped that belong to the same social sphere, and its boundaries define what belongs to a social sphere and what does not. In other words, a domain consists of all elements, such as actors, acts, events, and objects that are related to the same social sphere. For instance, the domain of 'politics', contains all political persons, political acts, political events, their consequences, whereas the domain 'private world' contains private persons, such as family and friends, and their acts in private life, their consequences, etc.

Whether one uses the categories of a social domain in interpreting the news depends on whether one perceives a connection between an issue or event in the news and that social sphere. As viewers use their own, partially individual knowledge to interpret the news, it can be hypothesized that different news items on different subjects may be interpreted using different domains. Simultaneously, viewers from different individual and social backgrounds may use different domains while interpreting the same news item. Also, the degree to which multiple domains are used can be different for different viewers. If a viewer uses five domains in the interpretation of a news item, s/he in fact links these categories to each other and to the news item. In other words, these domains are integrated into his or her representation of the news item to a larger degree than with a viewer who uses only one or two domains in a representation of a news item. In other words, the latter interpretation is less integrated than the former.

To summarize, whereas interpretive differentiation concerns the 'simple' types of elements in interpretations − elements that refer to inclusion and attribution types − integration refers to, first, relations between specific elements, and second, to categories of elements belonging to the same social domain.

Measuring interpretive integration

In this study, as well as in a previous contribution, we developed a method for classification of verbalized interpretations according to four aspects of differentiation and integration (Schaap, Konig, Renckstorf, and Wester, 2005). As we explain below, this system of categories was partly predefined by categories taken from other researchers (most notably James Spradley). However, developing it was partly an iterative effort as well, in which we searched for specific relationships and domains used by the viewers, in order to develop categories that are specifically used for interpreting (television) news. Here we predominantly report on the outcomes of the efforts to develop this coding strategy, as well as the data gathering method. At some points concerning the coding strategy however, we report more extensively on how different categories came about. In this contribution the focus is almost entirely on measuring integration.

The method for measuring interpretive complexity consisted of four components. First, a data gathering instrument to 'tap' viewer's thoughts at the moment they are watching the news, and second, a three-step procedure to assess the degree of integration in reported thoughts.

Data-gathering: Thought-Listing Technique

To capture news interpretations, participants were invited to individually watch a newscast compiled of regular news items. In order to allow the participants to communicate their interpretations freely and directly, we used a cognitive response method called the thought-listing technique (Schaap, 2004). This observation instrument required the participants to say out loud all the thoughts that came to mind while watching a news program.

We showed an eighteen minute videotaped news bulletin containing seven items to nineteen participants (Table 1). The participants were selected to include a broad range in sex, age, and education level[1]. The broadcast was edited so that the screen went black after short, 'natural' segments of the news, segments that were constructed in such a way as not to disrupt the normal flow of a news item too much. The segments averaged eighteen seconds in length. Participants were asked to say out

Table 1. *News bulletin for thought-listing technique, NOS 8 o'clock news, 21-11-2000.*

Item	Issue	Description	Length m:s
1	*Profession-related diseases*	Company doctors fail to report sick employees	3:18
2	*BSE*	The Netherlands will be testing cattle earlier and more often	2:54
3	*Israel*	Egypt withdraws its ambassador from Israel after rocket attacks on Palestinian territories	2:36
4	*Euthanasia*	Euthanasia directive used by family members to manipulate physicians when care proves difficult	2:30
5	*Exhibition*	Dutch Queen and German president open exhibition on Dutch-German relations	2:42
6	*Emmy Awards*	TV series 'All Stars' wins Emmy award for 'best drama series'	2:24
7	*Weather forecast*		1:18

Note. Item labels are ours. Item 1 was used as a practice item and was excluded from the analyses, as was the weather forecast

loud all thoughts they had while they were watching the news segment at each interval (for a more detailed description of the procedure and its logic, cf. Schaap, 2004). These verbalizations were recorded and subsequently transcribed, resulting in nineteen protocols of verbalized thoughts, with an average length of about 1,965 words ($SD = 1,585.03$; $Min. = 622$; $Max. = 6,827$). The thought protocols represented a direct and detailed report of interpretations during the program, and formed the basis for assessing interpretive differentiation. For the current analysis, we used the protocols of all nineteen participants regarding one single news item on political solutions to the BSE, or mad cow disease, problems in Europe (length: 2:54 min.). Furthermore, we used the protocols regarding the complete bulletin (that is, five news items), produced by two participants who, on face value, differed strongly in the complexity of their interpretations.

Data analysis: Three phases

Measuring interpretive integration required distilling from the thought protocols the *different explicit connections,* as well as the *different domains* used. Measurement took place in three steps: the construction of basic sentences, the coding of basic sentences, and the assessing integration scores.

1. Constructing basic sentences. People use language to refer to a person, actions, objects, feelings, etc. These references in turn contain indicators

for our analytical variables of relations and domains. As the way participants formulate their thoughts can sometimes be quite diffuse, we broke up each protocol into basic sentences. Each basic sentence represented only one statement loosely following the structure 'object x → *semantic relationship* → subject y' (cf. Kleinnijenhuis, Oegema, De Ridder, and Ruigrok, 1998; Osgood, Sporta, and Nunnally, 1956; Van Cuilenburg, Kleinnijenhuis, and De Ridder, 1988). The words and statements in these basic sentences were coded.

2. Coding of basic sentences. Procedure: micro-integration. In order to classify individual elements, in the study on interpretive differentiation we used a list of interpretive elements consisting of all possible elementary building blocks of interpretations (cf. Table 2). This list was developed from Spradley's (1979, 1980) matrix of social situations (cf. Schaap, Konig, Renckstorf, and Wester, 2005). Spradley maintained that interpretations of any social situation are made up of elements that correspond to a limited number of other elements that make up social situations in general, all related to the building blocks of any social situation, such as actors, acts, events, objects, feelings, times, and places. He proposed a slightly more extensive list of element types than we use in this project; in this study a number of his relations were deleted or combined in our coding scheme when these relations appeared not to be used by our participants when watching the news (cf. Schaap et al., 2005)[2]. This resulted in five broad categories of elements that were used for coding interpretations (Table 2). Of these five categories, three can be considered of a more abstract level, as they contain element types that refer to relations: elements that contain causal, logical, or temporal connections. Phrased differently, micro-integration assessed by coding elements expressing relations of cause-effect (*x* is a cause/effect of *y*), rationale, or reasons/functions (*x* is a reason for *y*; *x* is a function of *y*), and steps/ phases (*x* is a step/phase in *y*) (whereby *x* and *y* represent any possible element of the types actors, acts, events, objects, feelings, time, and places; cf. Table 2).

   All basic elements in the basic sentences were classified accordingly. Coders were required to decide for each element in a basic sentence whether it was a 'normal' non-relation element or an element that contained an explicit reference to one of these types of relations. We established coding reliability using two independent coders trained to use the coding scheme, who practiced coding on ten protocol segments. They coded a random sample of 20% of all protocols. Intercoder agreement was calculated for exact code agreement. Scott's *pi* for intercoder agreement for the coding of all elements (both simple and relational) was .88 (Scott, 1955).

Table 2. *List of basic element types: Simple and relational elements.*

Category	Types of elements
Simple elements	
Inclusion elements	*Kinds of* …: actors, goals and feelings, acts, activities, and events, space, time, and objects
Attribution elements	*Attributes of* …: actors, goals and feelings, acts, activities, and events, space, time, and objects
Relational elements	
Cause-effect elements (causal relations)	*Causes of* …: actors, goals and feelings, acts, activities, and events, space, time, and objects
Rationale and Function elements (logical relations)	*Reasons for and Functions of* …: actors, goals and feelings, acts, activities, and events, space, time, and objects
Sequence elements (temporal relations)	*Steps or phases in* …: actors, goals and feelings, acts, activities, and events, space, time, and objects

Procedure: macro-integration. Macro-integration refers to the number of different domains used within one interpretation. Domains were defined as spheres of social life. In other words, a domain is composed of all (types of) actors, acts, events, objects, times, places, and feelings, their attributes, causes and consequences, rationales and temporal aspects associated with a particular social sphere. Therefore, we must be able to assign each element in the protocols to a particular domain. To achieve this, we must first assess which social domains viewers may use in their reconstructions of the news program.

 Because we had only a very general *a priori* idea of what domains to expect in news interpretations, we first defined domains in both a deductive and inductive process. It was deductive in the sense that we used a pre-constructed list of 'prototype' domains derived from several lists of news domains constructed by others (cf. Schramm, 1949; Rosengren, 1986; Van Hoof, 2000). Many of these domains are represented in newspaper sections or different sections in news programs, and because they are established and explicit categories in the news, one would expect them to be used by the news audience as well. For each domain on this list, we then described the corresponding types of actors, acts, events, etc.

 In addition, we operationalized domains using audience categories. One of the main ideas in this project is that interpretations of the news should be studied from the audience point of view. As the elements that viewers used may not necessarily fit the domains expected by news makers and researchers, we assessed elements that would not fit in the pre-

Table 3. *Domains.*

Domain	Description and examples
Politics	Actors, acts, events, objects, etc. associated with politics: politicians, government, debates, implementing policy, its/their attributes, reasons, consequences and phases
Media	Actors, acts, events, objects etc. associated with mass media: journalists, movie stars, watching news, interviews, cameras, images and sounds, and their attributes, reasons, consequences and phases
Agriculture	Actors, acts, events, objects etc associated with agriculture: farmers, feeding cattle, farms, meat, cattle, their attributes, reasons, consequences and phases
Environment, infrastructure and zoning	Actors, acts, events, objects, etc. associated with the natural environment and infrastructure: environmentalists, architects, engineers, landscape, trees, roads, zoning, city plans, their attributes, reasons, consequences and phases
Economy and finance	Actors, acts, events, objects, etc. associated with economy: shopkeepers, companies, banks, investing, money, costs, income, debts, their attributes, reasons, consequences and phases
Crime and justice	Actors, acts, events, objects etc. associated with crime, justice, law and order: police, judge, criminals, laws, law enforcement, theft, and their attributes, reasons, consequences and phases
Health(care) and welfare	Actors, acts, events, objects, etc. associated with public or private health, health care well being, both physical and psychological: doctors, (mental) patients, feeling sick, operating, treatment, diseases, hospitals, and their attributes, reasons, consequences and phases
Education	Actors, acts, events, objects, etc. associated with education: teachers and students, school, studying, grades, school books, and their attributes, reasons, consequences and phases
Science	Actors, acts, events, objects, etc. associated with science: scientists/scholars, university, research, statistics, definitions, and their attributes, reasons, consequences and phases
Family life	Actors, acts, events, objects, etc. associated with family life: parents, children, the home, raising children, puberty, and their attributes, reasons, consequences and phases
Art	Actors, acts, events, objects, etc. associated with the arts in a broad sense: writers, painters, readers, books, sculpture, museum, fictional characters, and their attributes, reasons, consequences and phases
Culture and ethnicity and religion	Actors, acts, events, objects etc. associated with particular culture or nationality/ethnicity and with religion or philosophy: the Dutch, the French, Christianity, language, national flag, customs, and their attributes, reasons, consequences and phases

Table 3. *(continued)*

Domain	Description and examples
Leisure and sports	Actors, acts, events, objects, etc. associated with sports, and recreation: athletes, sports clubs, running, matches, stadiums, prizes, and their attributes, reasons, consequences and phases
War and disasters	Actors, acts, events, objects, etc. associated with war and (natural) disasters: soldiers, victims, rescuing, war zone, bombs, storms, and their attributes, reasons, consequences and phases
Private world	Actors, acts, events, objects, etc. associated with the personal life of the participant: the participant as private person, friends, family, personal history, acts and events in real life, and their attributes, reasons, consequences and phases
Viewing context	Actors, acts, events, objects, etc. associated with the experiment in which the participant is participating: the participant 'as participant', the researcher, talking out loud, watching this news item, the laboratory, filling out a questionnaire, and their attributes, reasons, consequences and phases
Other	Actors, acts, events, objects, etc. of a general nature, not associated with specific domains, such as talking, thinking, etc.

viously constructed 'prototype' domains. To assess the domains used by viewers, the protocols were read in an iterative process to identify additional or modified domains; both the pre-defined and the newly formed domains were treated as 'sensitizing concepts' (cf. Glaser and Strauss, 1967). This was done by applying 'contrast questions', that is, by looking for similarities and differences between elements: is this element similar to the elements in this domain, or is it different (cf. Spradley, 1979, 1980)? This meant that in this phase, the form and definitions of each domain were subject to change depending on whether newfound elements would fit into a previously constructed domain[3]. Thus, domains were formed from a 'news maker' as well as a 'news user' point of view. Eventually, we defined sixteen domains with descriptions and specific examples of the related basic elements, and one additional domain, 'other', which is a container category for elements not directly related to any actual domain (these were most often verbs that indicated general actions such as talking, thinking, walking, etc.). This list, an abbreviated version of which is shown in Table 3, was used for the definitive coding of domains in the protocols.

All 741 elements that the nineteen participants incorporated in their interpretation of the news item were classified into these seventeen do-

mains. 95.5% of all elements could be classified into the sixteen actual domains (excluding 'other') without any difficulty[4]. Two independent coders classified elements used representing 20% of the segments. Scott's *pi* for intercoder reliability was .89.

3. The integration scores were assessed. Micro and macro-integration were defined as the degree of use of relations and of domains respectively. Thus, the number of different relations and the number of different domains in each interpretation was counted. Relation-elements that referred to exactly the same specific relation more than once (for instance, if the exact cause-effect relationship 'I can't concentrate on what he's saying because he talks funny' was used more then once) were only counted one time. So, micro-integration was assessed counting the number of different relations in the three categories per participant. The use of domains was dichotomous, so a participant received a 1 for using a domain and a 0 for not using it. To analyze macro-integration, we counted the number of different domains used per participant.

Results

This study was intended to test the feasibility of the research approach for news reception research. To demonstrate the usefulness of the method and the data generated by it, we assessed whether the instrument was able to differentiate between different viewers' interpretations. Viewers have diverse social, situational and psychological characteristics, which are represented in different knowledge structures. As interpretive structures originate from the kind and amount of knowledge used by viewers to interpret the news, we can assume that viewers with different knowledge structures interpret identical television news items with different degrees of integration. As our research group consisted of participants who varied in three different characteristics (sex, age, and educational level), we expected differences between their interpretations in the number of explicit connections between individual elements, and the number of domains. In the initial analyses, aimed to assess integration differences between different interpretations, we included only the protocols regarding the news item on BSE (item 2, see Table 1).

Micro-integration

Below we present two segments of thought protocols produced by two participants while watching the news item 'BSE'. Both discuss the secretary of agriculture, who is featured in the news item defending his policy choices after being criticized by members of parliament. These segments

illustrate how two viewers can have the same types of thoughts, with the exception of the connections they make.

> *"Brinkhorst* [secretary of agriculture], *I don't know what kind of man he is. Highly political, I think. Of course he thinks everything's under control. He's got to make a lot of concessions."*
>
> (Participant 13)

> *"I think he [Brinkhorst] is kind of a pathetic little man. And of course he's not going to say he did anything wrong, politicians never do. And, well, if he had gone and told parliament what he thought, then they would've said he was inconsistent because he back-pedaled or whatever."*
>
> (Participant 1)

Both viewers are discussing the secretary of agriculture, and they express similar thoughts on his personality and how he does his job, so in this respect the interpretations are fairly similar. An important difference however, lies in the fact that the second viewer considers the reasons the secretary had for doing what he did; he did not tell parliament of his prior plans because he would have been called inconsistent. This is an example of a logical, or 'rationale' relation; 'he would have been called inconsistent' is a reason for not telling parliament of his earlier ideas. So in this regard, although in some respects both interpretations are quite similar, the second interpretation is more cohesive, and therefore more complex, as it makes an explicit connection between two basic elements.

On average, interpretations contained more than six relations; all participants incorporated at least one relation between elements into their interpretation of one news item (*Min.* = 1; *Max.* = 14; Table 4). This means that viewers were able to achieve some level of cohesiveness in their thinking about the news at the moment of watching it. Although it seems obvious for viewers to do this, in previous research this has not always been evident; cause-effect relations for instance are often considered hard to remember and reproduce, even more so as television news reports often seem to disregard the causes and consequences of events (Findahl and Höijer, 1985; Graber, 1990). However, not all viewers connected elements to the same degree; in fact differences were quite large (*SD* = 4.16).

The most used connections between elements were rationale/function relations (for example, reasons for acts and feelings of persons either in the news or connected to the issue, and reasons for the participant's own feelings and acts), followed by cause-effect relations (including such things as the causes of BSE, or the effects of agriculture policies), and

Table 4. *Micro and macro-integration in the interpretation of news item BSE per viewer.*

Participants	Micro-integration (number of abstract elements)	Macro-integration (number of domains)
1	14	8
2	6	10
3	5	7
4	3	6
5	7	7
6	9	7
7	4	7
8	4	6
9	2	5
10	12	9
11	9	9
12	8	7
13	1	5
14	3	4
15	14	9
16	2	7
17	11	8
18	3	3
19	3	6
N = 19	*N* 120	*N* 130
	M 6.32	*M* 6.84
	SD 4.16	*SD* 1.80

Table 5. *Micro-integration: Types of relations.*

	Minimum	Maximum	Mean	Std. Deviation
cause	0	7	2.00	2.03
Rationale & function	0	7	3.12	2.00
sequence	0	5	1.26	1.45
N = 19				

sequence relations (Table 5). Differences between mean use of cause-effect and rationale, as well as between rationale and sequence were significant in a paired samples t-test ($p = .031$, and $.001$ respectively, at $a = .05$ two-tailed), but the difference in means between cause-effect and sequence was not ($p = .240$)

Macro-integration

Although viewers may refer to many different actors, attributes, causes and consequences or other elements, the elements in an interpretation

may be related to many or only few different social domains, thus connecting an issue to a few or many different other social spheres. For instance, when interpreting an item on agricultural politics, one may refer to elements in only two domains, the most evident for this news item are agriculture (some examples of elements from our participants are: farmers are all out of money; they should test cattle much earlier; cows don't graze in meadows anymore), and politics (for example, she's a member of the Green party; are they going to decide this in parliament?). However, a viewer may interpret the news in reference to other domains, and/or include more than just one or two domains. Examples from our study include economics (consumption, exporting, concerns about money); health (meat causes obesity and cancer); culture (the French always want to have it their way); media (this is a strange camera angle); and private world (I recently discussed this with a friend of mine).

Participants used an average of almost seven domains in the interpretation of the BSE news item (*Min.* = 3, *Max.* = 10, Table 4). The fact that viewers related what they saw in the news to so many different social spheres seems quite remarkable when one considers that this news item was less than three minutes long. In contrast, in a panel study in which people were asked to mention similar 'themes' from the news they had consumed in a certain time period, they were not able to produce very many at all (Graber, 1984). Again, there were differences between viewers in the number of domains to which they related the news item (*SD* = 1.80; Table 4). In other words, some viewers' interpretations were more macro-integrated than others. The variation in differences in macro-integration was smaller than was the case for micro-integration of course, as the maximum number of possible domains was only seventeen, differences between the participants were expected to be smaller than differences in micro-integration, as the amount of relations that participants could incorporate in their interpretations was (theoretically) unlimited.

The three most frequently used domains were politics, agriculture, and private world (Table 6)[5]. The domains politics and agriculture were not unexpected in the interpretation of a news item on a parliamentary discussion on an agricultural disaster, which prominently featured politicians as well as agricultural issues, farmers, and images of cattle and farms. In addition, similarities in domain use between viewers is likely because most normally socialized members of a culture can be expected to share at least some (important) interpretations of the news (Findahl, 1998). In addition to the 'top three' domains, this item was also interpreted in terms of 'media' (mostly news media-related), culture (meaning cultural relations and differences between countries that import or export meat), and health (the hazards of contaminated meat). Four partici-

Table 6. *Number of participants that use a domain at least once (item BSE, N = 19).*

	Politics	Media	Agriculture	Economy	Crime	Health	Culture	Private	Context	Other
N	18	14	18	5	5	11	12	18	4	13
%	94.7	73.7	94.7	26.3	26.3	57.9	63.2	94.7	21.1	68.4

pants directed part of their interpretation towards the viewing context, including the experiment in which they took part. Domains such as culture, economy, and crime seemed more unanticipated *a priori.* Although fleeting references to some of these domains were made in the news item, the gist of the item is very strongly directed at the political and the agricultural and, somewhat more implicitly, to health issues. Viewers do not limit their interpretations to one or two of the most central domains in order to grasp only the most 'important' parts of the message (cf. Graber, 1984). More surprising may be that one viewer did not interpret the item in terms of agriculture and another did not see the item in terms of politics at all!

To summarize, according to our viewers this news item was mainly about what we may call, from an 'objective observer's point of view', the central themes of the item (politics and agriculture) and about the viewer him or herself, that is to say, what this news has to do with the viewer's private life. In addition, participants frequently used other domains, seemingly more peripheral to the intended message of the item.

Differences between viewers

We used the average scores in each category as criterion to divide participants into categories of either high or low micro and macro-integration. This yielded three interpretive integration profiles (Table 7; Fisher's exact test is significant at $a = .05$). The two largest groups were participants who produced interpretations either high or low on both aspects of integration. So, most participants who used many relations to connect individual elements, also used many domains, and participants who used few relations were most likely to use few domains as well. These two profiles can be called 'integrated' and 'fragmented' respectively. However, a third profile was also evident: interpretations that contain few relations between specific elements, but simultaneously covering many different domains. Some viewers apparently were inclined to connect the news item to many different domains in society, but did not have much consideration for causal, rationale, or temporal aspects of issues. This also suggests that micro and macro-integration are two separate dimensions of interpretation.

Table 7. *A typology of interpretive integration: Number of participants per subgroup (item BSE).*

Macro-integration	Micro-integration		
	Low	High	
Low	7	–	7
High	4	8	12
	11	8	*N* = 19

Table 8. *Correlations between 4 dimensions of interpretive complexity.*

	Elements	Range	Micro-integration	Macro-integration
Elements	–	.98**	.85**	.84**
Range		–	.81**	.77**
Micro-integration			–	.70**
Macro-integration				–

Note: ** Correlation is significant at $\alpha = .01$ (2-tailed, Pearson's *r*).

Comparison of differentiation scores of the same research group from the pilot study on differentiation (Schaap et al., 2005) with integration scores from this analysis revealed that differentiation and integration were related empirically, although the two integration scores showed slightly weaker correlations (Table 8). Thus, highly differentiated interpretations were very likely also highly integrated. This also implies that the four indicators of interpretive complexity refer to measurements of related empirical phenomena. In other words, it provides indications for construct validity.

Differences for individual viewers

It was mentioned above that viewers' knowledge and motivations supposedly greatly affect news reception. Knowledge and motivations are partly specific to knowledge domains, as one does not have much knowledge and motivation in general, but rather knowledge and motivation in regard to specific subjects (Schaap et al., 2005). Therefore, we expected that the interpretation of different news items would not only vary between different viewers, but also for each individual viewer, according to differences in knowledge and motivation. In other words, based on this theoretical assumption, our measurement instrument should be able to discriminate not only between interpretations of different viewers, but

Table 9. *Integration of the interpretation of five news items by two participants.*

News Item and length	No. of 'breaks'	Participant A		Participant B	
		Micro-integration	Macro-integration	Micro-integration	Macro-integration
2. 2:54	10	14	8	3	4
3. 2:36	8	19	9	5	3
4. 2:30	8	20	9	4	2
5. 2:42	10	9	10	–	4
6. 2:24	9	6	7	–	2
N		68	42	12	15
M		13.6	8.6	2.4	3
SD		6.11	1.14	2.30	1.00

also between interpretations of the same viewer of different news item. To test this, we selected two participants whose protocols on face value seemed to be located on extreme sides of the simple-complex dimension in terms of overall interpretive complexity, and compared their interpretive integration scores on five news items of about the same length (ranging 2:24 to 2:54). Corresponding to participants number 1 and number 14 in Table 4, in what follows these participants are called participant A and B, respectively.

There were indeed differences between the two exemplar viewers in both micro and macro-integration: participant A's interpretation was noticeably more integrated than participant B's. The average amount of relations used by participant A was about 5.5 times, and the amount of domains almost three times as large as the amount used by participant B. Comparing the scores for each item, it seems that the level of integration was fairly constant within viewers: participant A's interpretation was *always* more integrated than participant B's. This may be explained by differences in structural personal characteristics such as educational level, since in this instance participant A had a higher educational level than participant B (cf. Luskin, 1990). As could be expected, each item had some specific domains that were used exclusively or more extensively in the interpretation of that particular item. For instance a 'war' domain was used by many viewers in the interpretation of two items, one on the Israeli-Palestine conflict, and the other on an exhibition regarding Dutch-German relations. A 'health' domain was prominent in interpretations of a news item on euthanasia. Other domains seemed to be referred to with less regard to the specific news content, such as 'media' and 'private world'.

However, there were also differences between interpretations of different news items for the individual participants. Some news items for one particular viewer evoked more integrated interpretations than other items (but not necessarily the same items for different viewers). Some items are interpreted much more in terms of causal, logical, and/or temporal relations than other items by the same viewer. Furthermore, although within a smaller range, the same viewer may relate some news items to more social spheres than other news items. These differences within viewers may be related to more dynamic viewer characteristics, for instance motivational factors such as interest, involvement, psychological distance, and prior knowledge (Berry, 1988; Findahl and Höijer, 1985; Giegler and Ruhrmann, 1990; Graber, 1984; Luskin, 1990; Price and Zaller, 1993; Woodall et al., 1983). From the difference in use of relations and domains between the items number 4 and number 6 in the interpretation of participant A for instance, we may hypothesize that this participant's possessed considerably more knowledge and/or was more interested in news item 4 than news item 6. We conclude that, although individual viewer differences were on occasion subtle, the instrument was able to differentiate between both interpretations of different viewers, and interpretations of different news items by the same viewer.

Conclusions and discussion

Ultimately, this research was conducted to contribute to understanding of television news effects. The goal of this study was to devise a systematic way of studying television news interpretations by means of analyzing structural properties of interpretations (that is, the elements, types of elements, relations and domains). Whereas Schaap, Renckstorf and Wester (2005) concentrated on measuring the first aspect of complexity, interpretive differentiation, here the focus was on a measurement for interpretive integration.

Results indicate that we are able to measure interpretations and classify them on the basis of these structural components in both a valid and reliable manner. First, reliability of the coding of interpretive integration in verbal protocols was satisfactory. Second, we were able to differentiate between interpretations made by different viewers, and between interpretations of different news items by the same viewers. The findings were in line with theories on news processing and cognitive complexity, which hold that differential interpretations are based on differences in knowledge structures and motivations. Because knowledge and motivations differ both between viewers and within viewers according to different subject matter, interpretations should differ between viewers, within viewers, and between subject matter. On the other hand, structural viewer characteristics such as sex, age, and educational level may

limit variation for interpretations by the same individual. For instance, because of a low level of interest in a certain news issue, one individual's interpretation may be less complex than the same individual's interpretation of another issue. At the same time, his/her high level of education may provide skills that keep each interpretation of this individual relatively stable in terms of complexity. Finally, high correlations between all four indicators of interpretive complexity indicate that they refer to four dimensions of the same concept. All these findings provide indications for the validity of the instrument.

Evidently, both the method and the current study have limitations. First and foremost, the sample does not allow for definitive conclusions, neither in regard to the results, nor to the validity of the method. Second, although we made efforts to ensure that the role of researcher's interpretations be as small as possible, some level of context sensitivity, and therefore, subjective choices in the classifying of textual elements from the participant's protocols was still required. For instance, when classifying an element into a domain, a coder must define whether a person mentioned by a participant is a politician, a media personality, a farmer, etc. These kinds of interpretive actions are inevitable. However, as our reliability scores indicate, this does not seem to have affected the quality of the coding very much. One last reservation may be that we have considered elements that convey relations 'elements of a special kind': in the interpretive complexity scores they contribute to both the differentiation of an interpretation (as they are *elements*) and to the integration (as they are *connective* elements). This may be debatable, as it means that they are counted in the score of both differentiation and integration for each viewer.

In conclusion, we believe we have a method that is capable of producing results that are of interest for understanding the effect of television news. For example, our findings on the use of relations in the interpretation illustrate this. Researchers have claimed that the news does not induce the making of connections, as the average news item does not contain many causal relations, etc. As a result, viewers do not make many connections, and interpret the news in terms of a relatively small amount of 'themes'. This results in viewers having a limited understanding and recollection of, for instance, causes of events presented in the news, and in a focus on only on the most important dimensions of news items (cf. Findahl and Höijer, 1985; Graber, 1984). Yet our study paints a somewhat different picture, as it seems that viewers do make causal, logical or temporal connections while watching the news, and use a fair number of different domains, although they may not always concur with those expected by 'objective observers'. In other words, whereas findings from other research indicate that viewers do not seem to recall precise

facts of news items, from our study we conclude that this is not by definition caused by a lack of active reception behavior. Viewers do seem to actively do something with information in the news while viewing.

Notes

1. The research group consisted of ten women and nine men. Age ranged from twenty to 64 years ($M = 38$ years). Twelve participants had reached a low educational level (that is, any degree up to and including vocational secondary education) and seven participants had obtained higher education (a bachelor's degree or some more advanced degree).
2. See Chapter 5: 'Means-end relations', 'location-for-action relations', and 'spatial' were incorporated into other categories, or deleted altogether. The categories 'rationale' and 'function' were combined into one category.
3. We did this by continually posing 'structural questions' with each element: 'What kind of element is this?' Whenever we had classified an element (this is a media personality; domain media) we proceeded by repeating the question associated with the domain in which an element was classified: This was a media personality, are there any more media personalities? Are there also media acts? Are there also media objects?, etc. Using the content of an element as basis, we formed specific categories of elements in each general category provided by our prototype coding scheme. For instance, George W. Bush is not 'just' an actor, he is a specific kind of actor; he is a politician, therefore we have a clue to the existence of a domain involving politicians.
4. The sixteen actual domains were assessed based on the elements used in the interpretation of the entire news program, whereas our analysis focused on the interpretation of only one news item. Of course, not all domains were used in the interpretation of this particular item.
5. This analysis shows whether or not a viewer used a domain; it does not show the intensity with which a domain was used, if a large or small part of his/her interpretation was dedicated to a particular domain (for example, whether a viewer used five or fifty elements in that domain). It should be noted that there can be large differences between interpretations regarding intensity.

References

Al-Menayes, J. J., and Sun, S. W. (1993). Processing complex information: What are cognitive units and how are they related? *Gazette, 52*, 57−84.

Berger, P. L., and Luckmann, T. (1967). *The social construction of reality: A treatise in the sociology of knowledge.* New York: Doubleday.

Berry, C. (1988). Rundfunknachrichtenforschung: Ein Beitrag zur Klärung der Wirkung von Präsentation und Motivation [Broadcast news research: A Contribution to the explanation of the effect of presentation and motivation]. *Media Perspektiven, 3,* 166−175.

Cuilenburg, J. J. van, Kleinnijenhuis, J., and Ridder, J. A. (1988). *Tekst en betoog* [Text and argument]. Muiderberg, The Netherlands: Coutinho.

Findahl, O. (1997). Go cognitive and go on-line: New directions in media research. In U. Carlsson (Ed.), *Beyond media uses and effects* (pp. 61−80). Göteborg: Nordicom.

Findahl, O. (1998). News in our minds. *Communications: The European Journal of Communication Research, 23*(4), 409−425.

Findahl, O., and Höijer, B. (1985). Some characteristics of news memory and comprehension. *Journal of Broadcasting and Electronic Media, 29*, 379−396.

Giegler, H., and Ruhrmann, G. (1990). Remembering the news: A LISREL model. *European Journal of Communication, 5*, 463−488.

Glaser, B. G., and Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine.

Graber, D. A. (1990). Seeing is remembering: How visuals contribute to learning from television news. *Journal of Communication, 40*, 134−155.

Graber, D. A. (1984). *Processing the news. How people tame the information tide*. New York: Longman.

Gunter, B. (2001). Television news and the audience in Europe: What has been happening and where should we go next? In K. Renckstorf, D. McQuail, and N. Jankowski (Eds.), *Television news research: Recent European approaches and findings* (pp. 17−46). Berlin: Quintessence.

Höijer, B. (1989). Television-evoked thoughts and their relation to comprehension. *Communication Research, 16*, 179−203.

Höijer, B. (1998). Cognitive and psycho-dynamic perspectives on reception of television narration. In B. Höijer and A. Werner (Eds.), *Cultural cognition: New perspectives in audience theory* (pp. 73−84). Göteborg: Nordicom.

Hoof, A. M. J., van (2000). *Kranten met karakter. Identiteit van kranten vanuit kwaliteitsperspectief.* [Newspapers of character. Newspaper identity from a quality point of view.] Amsterdam: Thela Thesis.

Judd, C., and Krosnick, J. (1989). The structural bases of consistency among political attitudes: Effects of political expertise and attitude importance. In A. R. Pratkanis, S. J. Breckler and A. G. Greenwald (Eds.), *Attitude structure and function*. Hillsdale: Lawrence Erlbaum.

Kleinnijenhuis, J., Oegema, D., De Ridder, J. A., Ruigrok, P. C. (1998). *Paarse polarisatie: De slag om de kiezer in de media* [Purple polarization: The battle for the voter in the media] . Alphen a/d Rijn, The Netherlands: Samsom.

Luskin, R. C. (1987). Measuring political sophistication. *American Journal of Political Science, 31*, 856−899.

Luskin, R. C. (1990). Explaining political sophistication. *Political Behavior, 12*, 331−361.

Osgood, C. E., Sporta, S., and Nunnally, J. C. (1956). Evaluative assertion theory. *Litera, 3*, 47−102.

Price, V., and Zaller, J. (1993). Who gets the news? Alternative measures of news reception and their implications for research. *Public Opinion Quarterly, 57,* 133−164.

Robinson, J. P., and Davis, D. K. (1990). Television news and the informed public: An information-processing approach. *Journal of Communication, 40*(3), 109−116.

Rosengren, K. E. (1986). Media linkages between culture and other societal systems. In M. McLaughlin (Ed.), *Communication Yearbook 9* (pp. 19−57). Beverly Hills: Sage.

Schaap, G. (2004). Using protocol analysis in television news research: Proposal and first tests. In K. Renckstorf, D. McQuail, J. Rosenbaum, and G. Schaap (Eds.), *Action theory and communication research: Recent developments in Europe* (pp. 115−140). Berlin: Mouton-De Gruyter.

Schaap, G., Konig, R., Renckstorf, K., and Wester, F. (2005). Measuring the complexity of viewers' television news interpretation: Differentiation. *Communications: The European Journal of Communication Research, 30*, 459−575.

Schaap, G., Renckstorf, K., and Wester, F. (2005). Conceptualizing television news interpretation by its viewers: The concept of interpretive complexity. *Communications, 30*, 269−291

Schramm, W. (1949). The nature of news. *Journalism Quarterly, 26*, 259−269.

Schroder, H. M., Driver, M. J., and Streufert, S. (1967). *Human information process-ing: Individuals and groups functioning in complex social situations.* New York: Holt, Rinehart and Winston.

Scott, W. A. (1955). Reliability of content analysis: The case of nominal scale coding. *Public Opinion Quarterly, 19*, p. 503−515.

Shapiro, M. A., and Lang, A. (1991). Making television reality. Unconscious processes in the construction of social reality. *Communication Research, 18*, 685−705.

Spradley, J. P. (1979). *The ethnographic interview.* New York: Holt, Rinehart and Win-ston.

Spradley, J. P. (1980). *Participant observation.* New York: Holt, Rinehart and Winston.

Wahldahl, R. (1998). A cognitive perspective on media effects. In B. Höijer and A. Werner (Eds.), *Cultural cognition: New perspectives in audience theory* (pp. 41−58). Göteborg: Nordicom.

Woodall, W. G., Davis, D. K., and Sahin, H. (1983). From the boob tube to the black box: Television news comprehension from an information processing perspective. *Journal of Broadcasting, 27*(1), 1−23.