

Trust in News Media

Development and Validation of a Multidimensional Scale

Matthias Kohring

University of Münster, Germany

Jörg Matthes

University of Zurich, Switzerland

The dimensions that individuals apply in evaluating the trustworthiness or credibility of news media bear great theoretical and practical relevance. In previous research, however, there is no standardized scale for the measurement of trust in news media. Thus, the purpose of this article is to present the development and validation of a multidimensional scale of trust in news media. A theoretically derived model is tested on a representative sample via confirmatory factor analysis. After some modifications, the model is then validated on another independent sample. These results confirm the hypothesis that trust in news media can be considered a hierarchical factor (of second order) that consists of four lower order factors, including trust in the selectivity of topics, trust in the selectivity of facts, trust in the accuracy of depictions, and trust in journalistic assessment. This model is the first validated scale of trust in news media in communication research.

Keywords: *trust in media; credibility; scale development; confirmatory factor analysis*

Since the 1990s, the concept of trust has been met with growing interest in the social sciences (Earle & Cvetkovich, 1995; Giddens, 1990; Hardin, 2002; Misztal, 1996). Trust is considered an important basis for social order and a foundation for social cohesion. Trust is therefore a key concept for a functioning modern society amid its indefinite prospects and overwhelmingly risky decisions. From the perspective of communication research, trust can be considered a crucial variable for media effects (Tsfati, 2003); it informs us how individuals perceive and evaluate news media. It is interesting that communication scholars usually prefer the term *credibility* instead of *trust*. Consequently, explicit theories of trust have not been

Authors' Note: An earlier version of this article was presented at the 55th annual convention of the International Communication Association, May 26-30, 2005, in New York, and was awarded as a top faculty paper by the Journalism Studies Interest Group. The authors would like to thank the German Research Foundation for funding this project (No. KO 1854/2-1) and two anonymous reviewers for their helpful comments on an earlier version of this article.

considered as significant in this area. However, this does not mean that the terms *trust* and *credibility* stand for different, mutually exclusive concepts (Self, 1996). In fact, some recent scholars use the term *trust*, although heavily drawing on media credibility research (Kiousis, 2001; Tsafati & Cappella, 2003, 2005). In this article, we focus on the term *trust* instead of *credibility*. This allows us to directly link research in the field of mass communication with the sociological theories of trust (Tsafati & Cappella, 2003). These theories primarily refer to the specific selectivity of social actors, such as news media. By doing so, theories of trust seem to offer a basis on which to derive relevant dimensions of trust in news media.

This article deals with the operationalization of trust in journalism, which will henceforth be called "trust in news media." Trust in news media shall not refer to other forms of media communication, such as advertising or entertainment. Without doubt, the various dimensions that individuals apply in the process of evaluating the trustworthiness of news media bear great theoretical and practical relevance. It is therefore surprising that there is so far no standardized scale for the measurement of trust in news media. In some instances, the empirical measurement of trust is even carried out with single-item measures. For example, people are merely asked how much "trust" they put in certain actors (Chanley, Rudolph, & Rahn, 2000). In such studies, it remains rather unclear what exactly is measured and how it can be interpreted. It is important to note, however, that discussions dealing with the methodological problems of operationalizing trust in news media continue to loom (Kiousis, 2001, p. 384; Metzger, Flanagin, Eyal, Lemus, & McCann, 2003, p. 309; Self, 1996, p. 434). Scholars seem to agree that we still lack a theoretically derived, reliable, and validated instrument for the measurement of trust in news media. This article aims to remedy this deficiency through the construction and empirical validation of a multidimensional scale of trust in news media.

Trust in News Media Versus Media Credibility

In the field of communication, research concerning trust in news media has emerged almost entirely under the label of media credibility. Examining this line of research, we can find three different methodological approaches for the measurement of credibility: first, studies on source credibility; second, research on the comparative credibility of newspapers, television, and radio; and third, research that seeks to identify dimensions of credibility in factor analytical studies.

Source Credibility

It has been the original work by the Yale Communication Research Program associated with the name Carl I. Hovland that has enormously fueled research on trust and credibility (Hovland, Janis, & Kelley, 1959). The Yale Communication Research

Program focused on experimental studies on attitude changes. Hovland et al. (1959) emphasized the influence of communication sources. Individual persons and institutions, as well as journalistic media organizations, such as general-interest magazines, are included as sources in these experiments. As a consequence, credibility was considered to be a universal characteristic of a general communication source, irrespective of its specific professional context (Hovland et al., 1959, p. 19). Hovland et al. (1959, p. 21) distinguished two components of credibility: expertise and trustworthiness. Expertness referred to "how well informed and intelligent" a communicator is perceived. Trustworthiness was operationalized by the absence of persuasive intentions and as impartiality. These two components influenced the entire scope of media credibility research up to this day.

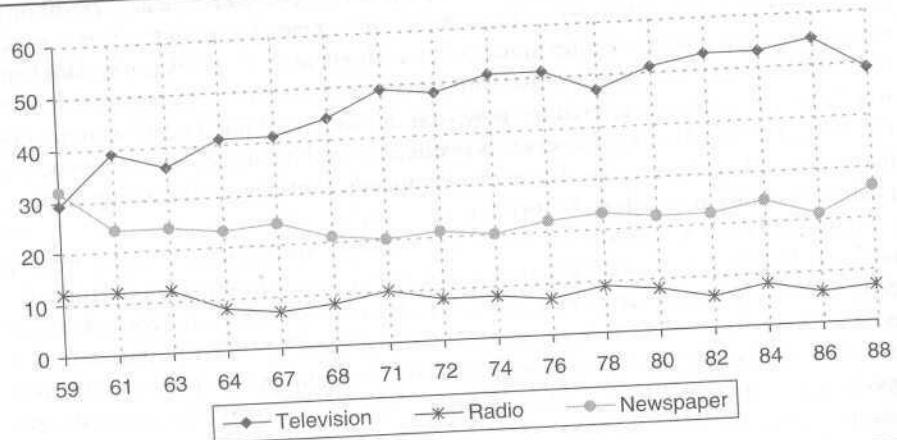
However, from a perspective that is interested in an explicit theory of trust in news media, the lack of theoretical clarification of the credibility construct is critically noted by many researchers (Earle & Cvetkovich, 1995; Kiousis, 2001; Metzger et al., 2003). According to Earle and Cvetkovich (1995), "the Yale program was based on inconsistent and, in certain cases, invalid premises" (p. 15). From the perspective of communication research, it seems that the specificity of news media and journalistic news requires more than is provided by the *general* concept of source credibility. However, it is important to emphasize the efforts by the Yale Group to expand the old concept of prestige to be multidimensional (Arnett, Davidson, & Lewis, 1931; Asch, 1948; Bowden, Caldwell, & G. A. West, 1934; Kulp, 1934; Lorge & Curtis, 1936). Nevertheless, it remains unclear whether the two components identified by the Yale Group are *dimensions of credibility* or *reasons for credibility*. In other words, is expertness an aspect of credibility itself, or is it one variable among others (e.g., attractiveness) that can lead to the attribution that a communicator is credible? For example, is a person's trust toward his or her dentist already fulfilled when he or she knows that this dentist is an expert, or is this expertness more likely one reason among others to trust his or her dentist that he or she will not torment him or her too much while rescuing a broken tooth? Moreover, Hovland et al. were not interested in a confirmation or validation of these two components.

The Comparative Approach of Media Credibility

The foundation of comparative media credibility research can be traced back to Burns W. Roper's seminal studies on the credibility of radio, television, newspapers, and magazines. Beginning in 1959, every 2 years the U.S. audience was asked the so-called Roper (1985) question:

If you got conflicting or different reports of the same story from radio, television, the magazines and the newspapers, which of the four versions would you be most inclined to believe—the one on radio or television or magazines or newspapers? (p. 3)

Figure 1
Relative Media Credibility in the United States From 1959 to 1988
 (in percentages: Data From Roper Organization, 1989, p. 28)



The question was incorporated in a number of other surveys (Greenberg & Razinsky, 1966; Mulder, 1980; Shaw, 1973; Westley & Severin, 1964). Although the newspaper remained the most credible source of information until 1959, Roper's data later showed the definite "credibility advantage" of television (see

Figure 1). Despite its landmark status in the history of the field, sharp criticism has been leveled against the Roper question (Carter & Greenberg, 1965; Gantz, 1981; T. Meyer, 1974; Shaw, 1973; Stone, 1969/1970). One shortcoming is the simple differentiation of publication types, such as "television" versus "newspaper" (Robinson & Kohut, 1988, p. 188). In addition, media recipients apply different concepts to evaluate television and newspapers (Newhagen & Nass, 1989, p. 284). Another severe shortcoming is the fact that any general question concerning the "newspaper" does not correspond to the specific user behavior of the recipient. In the case of quality papers, it can be shown that the credibility "advantage" of television compared to newspaper recedes when the actual media use is controlled (Kohring, 2004b, p. 53). Furthermore, a strong methodological problem results from the fact that credibility is measured based only on one single indicator. This makes reliability assessments impossible (Gantz, 1981, p. 168). In short, the "chief methodological problem remains the treatment of media source credibility as a unidimensional concept" (T. Meyer, 1974, p. 50).

Table 1
Scales for "Credibility" and "Community Affiliation"
 of News Media (P. Meyer, 1988, pp. 572, 574)

Credibility	Community affiliation
Fair	Concerned with your interests
Unbiased	Concerned with society's welfare
Tells the whole story	Patriotic"
Exact	Mostly concerned with public interest
Trustworthy	

a. In Gaziano and McGrath's (1986, p. 454) study, "patriotic" belongs to a nonstandardized third factor, which is not further discussed by the authors.

Factor Analytical Approach

Particularly in the 1970s and 1980s, many researchers attempted to extract dimensions of media credibility using the statistical method of factor analysis. In this so-called factor analytical approach of media credibility research, credibility is understood to be a multidimensional construct (Gaziano & McGrath, 1986; Lee, 1978). Semantic differentials of adjectives and some journalism-related items were analyzed with the help of explorative factor analysis. The determined factors were then interpreted as dimensions of credibility. For instance, Jacobson (1969) measured credibility using semantic differentials with 20 pairs of adjectives. An explorative factor analysis led to the two credibility-based factors "authenticity" and "objectivity" as well as two alleged non-credibility-based dimensions, namely dynamism and respite.

In 1985, the American Society of Newspaper Editors (ASNE, 1985) conducted a survey on the concept of credibility (see also Gaziano, 1988; Gaziano & McGrath, 1986). In contrast to earlier ones, this study partially incorporated more specific questions related to journalism (e.g., concerning the separation of facts and opinions, consideration of readers' preferences, and sensationalization; Gaziano & McGrath, 1986, p. 455). The result was a "credibility factor" with 12 items and a "social concerns factor" with 3 items.

Although the entire factor analytical research concentrated on the development of scales for measuring media credibility, only P. Meyer's (1988) watershed study explicitly focused on the review, advancement, and validation of existing scales. Meyer reanalyzed the original ASNE data, tested their reliability, and finally came up with five pairs of adjectives for "credibility" (Cronbach's alpha = .83) and four for "social affiliation" (Cronbach's alpha = .72) (see Table 1).

A few years later, M. D. West (1994) followed up on Meyer's study by further validating the scale. The author criticized that research neglected methodological

issues in scale development. For instance, almost all factor analytical studies worked with explorative factor analyses, which by definition cannot produce representative results; "exploratory factor analytic techniques, while useful during the initial hypothesis-building stage of scale construction, are unable to confirm the validity and reliability of scales" (M. D. West, 1994, p. 161). In fact, West considered the Gaziano-McGrath scales as "the only set of scales for the measurement of media credibility to have undergone validation" (p. 160). In a confirmatory factor analysis, West tested the two different scales by Gaziano and McGrath as well as the two Meyer scales with new data ($n = 138$). In addition, Meyer's credibility scale was tested using Meyer's original data. According to West, the results gave support that Meyer's credibility scale is the only construct to accurately represent the data (of West's sample). The author hoped to create a standardized scale: "Such a development could vastly simplify cross-study comparisons of credibility and encourage investigations of credibility as a single element within larger, macro-social persuasive processes" (M. D. West, 1994, p. 165).

Apart from the theoretical objection that the pairs of adjectives used in the factor analytical approach are mostly not specific to news media and are only able to describe general characteristics of communication, the methodical critique on the factor analytical approach illustrates the general problems associated with explorative factor analysis (Gorsuch, 1983, pp. 369-372). The assumption that factors of an explorative study are the actual dimensions of the examined construct is a first point of criticism. The definite factors of a construct can only be considered as identified after they have been replicated on different samples and integrated in a theoretical framework. But in fact, the Gaziano/McGrath-Meyer-West scales have not been consistently used in previous research. Different researchers have applied different items from these scales; therefore, different reliabilities and different factor analytical solutions emerged. For instance, Kiousis (2001) measures media credibility with items derived from P. Meyer (1988) and M. D. West (1994) and yields low reliabilities (ranging from .50 to .62). Tsafati and Cappella (2003), Flanagin and Metzger (2000), and Johnson and Kaye (1998) only report one credibility factor instead of the two factors originally found by P. Meyer.

As a second point of criticism, Gorsuch points out the danger of insufficient reflection on the choice of items. Finally, many exploratory studies do not report the details of an analysis, such as how the decision for the number of factors or the type of rotation was made (McCroskey & Young, 1979). These deficiencies prevent replication or modification of the results. Gorsuch's conclusion that such problems are due to a lack of theoretical reflection is also applicable to factor analytical media credibility research (McCroskey & Young, 1979, 1981). An explicit definition of the credibility construct is hardly ever attempted in any study (Al-Makaty, Boyd, & van Tubergen, 1994; Gantz, 1981; Gaziano & McGrath, 1986; Jacobson, 1969; Johnson & Kaye, 1998; Newhagen & Nass, 1989; Wanta & Hu, 1994). Consequently, the definition of credibility is only evident for the reader in the resulting factor solution (for

this critique, see McCroskey & Young, 1979, 1981). Cronkhite and Liska (1976) put it bluntly: "It seems clear that the search for a generalized definition of credibility by these means is likely to be as costly and fruitless as the search for the Holy Grail, without any of the attendant pleasures and adventures" (p. 92). This is more or less also true for M. D. West's (1994) study, the only analysis in media credibility research that involved confirmatory factor analysis. First, although this study is excellent in methodological terms, the reported Goodness of Fit Indices (GFIs) of .87 and .85 (Adjusted GFI) indicate that the theoretical model does not fit the data.¹ In other words, West was not able to verify the P. Meyer (1988) scale. Second, and more important, the dimensions of credibility are neither theoretically derived nor integrated in a theory of media credibility. West's seminal study has definitely shown the methodological direction that media credibility research should adopt. However, important questions still remain unanswered.

In summary, we can observe an increasing precision in measurement from the seminal Yale studies to the factor analytical approach applied by M. D. West (1994): There is a movement from unidimensional to multidimensional measures, and there is a movement from applying items of source credibility to applying specific items of media credibility (Metzger et al., 2003, p. 310). Although all three lines of research discussed here are without doubt important milestones for our understanding of how credibility can be measured, they appear to demonstrate the frequently repeated criticism that there is no theoretically derived and widely accepted operationalization of the concept (Self, 1996). In most of the research, journalism theory seems to be considered with an attitude of common sense which sees news media merely as an information facilitator. By reducing journalism to an information facilitator obliged to objectivity, journalism's specific selectivity, a crucial foundation for a theory of trust in news media is disregarded. This disregard of journalism theory has at best led to the intuitive plausibility of media credibility concepts (see Gaziano, 1988, p. 270, Table 1 for the concepts of American surveys of 1985). As P. Meyer (1988) states, face validity depicts a far too modest claim for communication research and is "fair enough, perhaps, for ASNE's purposes, but for research knowledge to be cumulative, we badly need an academic definition linked to a prior construct" (p. 570). Or as Metzger et al. (2003) put it, the "intense focus on measurement has perhaps come at the cost of developing clear conceptual definitions of media credibility that could be used to form consistent operationalizations of the concept" (p. 309).

Taken together, research on media credibility encompasses a rich empirical literature, and it offers some useful hints for our understanding of trust in news media. However, so far, there are no standardized scales for the measurement of trust in news media in communication research. As should be apparent from the previous section, scholars interested in the concept of trust have used credibility scales to measure trust in news media (Kiousis, 2001; Tsafati & Cappella, 2003, 2005). In this article, we advocate an approach to the study of trust that combines the concepts of

trust and credibility on one hand and theories of journalism and modern society on the other.

A Multiple Factor Model of Trust in News Media

For a theory of trust in news media to be a part of society, theoretical concepts of society that transcend the simple identification of an information society seem necessary. Modern societies are characterized by enormous complexity. Thus, the main problem of social actors becomes the selectivity of other social actors (Barber, 1983; Giddens, 1990; Luhmann, 1979; Seligman, 1997; Simmel, 1964). Trust is perhaps the most important mechanism in helping people deal with the risk of an open future. Other mechanisms are, for example, contracts or planning. Trust enables people to compensate for the risk of giving up control to someone else. By trusting, the complexity of the future is reduced; the trusting actor (the trustee) acts as if the future only held certain possibilities (Luhmann, 1979). In this instance, trust replaces knowledge. However, in the act of trusting—as a state midway between knowing and not knowing (Simmel, 1964)—the trusting actor does not know whether his or her trust is warranted. A trust situation is therefore defined as follows: Social Actor A selectively connects his or her own action with a certain action of Social Actor B under the condition of a perceived risk. The risk refers to the fact that A's action becomes impossible when B does not fulfill the trust expectation toward him or her. For the Trustee A, this risk has not become legitimately tolerable because of factual criteria (Kohring, 2004b, p. 130).

Altogether, one can say that trust is addressed to another social actor. Furthermore, it expresses an expectation toward this actor, which refers to a future action, and is characterized by insufficient knowledge about the outcome of this future action. Therefore, trust includes the awareness of a certain risk. Both aspects, open future and perceived risk, are decisive for trust situations. In other words, when there is nothing at stake, trust is not needed.

As stated previously, modern societies are characterized by autonomous expert systems, such as news media, each with its own organizational structure, specialist language, and logic of action (Giddens, 1990). An individual is not able to control the effectiveness of these systems on his or her own because of a lack of knowledge and other insufficient resources, such as money and time. Given that, we suggest that news media can be regarded by most people as the crucial source of information about social and political life. The societal function of news media consists of selecting and conveying information about the complex interdependencies of modern society. By doing so, news media enables their public to fulfill their need for orientation to their social environment and to adjust their expectations regarding other social actors (e.g., politicians). Trust in news media is therefore a necessary condition for trust in other social actors. However, because journalists cannot provide all

information about any possible issue, news media always selectively inform the public about issues, personalities, and events. This selectivity of news reporting makes relying on news media itself a risky action.

According to this line of reasoning, it becomes apparent that the theoretical basis for an analysis of trust in news media is the term *selectivity*. Trust in news media means trust in their specific selectivity rather than in objectivity or truth. Our model of trust in news media (Kohring, 2004b) assumes that news media are continually aware of whether events of one specialized part of our differentiated society may potentially evoke consequences in other areas of the society. The news media only communicate events that may be simultaneously meaningful beyond the societal sphere in which they occur (Kohring, 2004a, pp. 195-198; 2006). This observational service of journalism relieves other societal systems of the necessity to constantly verify and possibly modify the expectations of their environment. The audience's specific trust in news media is therefore based on the idea that the news media's information actually facilitates such guidance. Guidance means that journalistic selections are basically incorporated into a recipient's further selections. It is only the information from the news media that enables the members of the audience to act in a modern society.

In summary, when people put their trust in news media, they take a certain risk. This is because journalists selectively choose some information over other information. Therefore, when trusting news media, people trust in specific selections. Conceptually, four dimensions of journalistic selectivity can be derived from these deliberations. Our hypothesis is that in their interaction, these dimensions constitute the construct of trust in news media. All four factors are therefore derived from the function of news media depicted earlier, and in various ways, they find reference to the specific journalistic selectivity associated with this function. We believe that when recipients come to trust in news media, their assessment is based on the following four dimensions: "trust in the selectivity of topics," "trust in the selectivity of facts," "trust in the accuracy of depictions," and "trust in journalistic assessment" (in detail, Kohring, 2004b, pp. 170-177).

(a) Trust in the Selectivity of Topics

The first dimension of trust is associated with the selection of reported topics. The recipients trust that the news media will focus on those topics and events that are relevant to them.

(b) Trust in the Selectivity of Facts

This dimension concerns the selection of facts or background information pertaining to a topic that has already been selected. It is the way in which an event is contextualized that is relevant to this dimension.

(c) Trust in the Accuracy of Depictions

This dimension includes trust in verifiable and approvable accuracy of depicted facts. Although observations are highly selective and their classification into "right" or "wrong" is not objectively assignable, a number of observations allow a standardized classification into "right" and "wrong" and are therefore verifiable.

(d) Trust in Journalistic Assessment

The selection of an event or information already represents an evaluation (see factors above). Additionally, there are explicitly emphasized assessments, especially in commentary structure. These offer advice as well as assessments of and appeals for action.

In this conceptual view, trust in news media itself is regarded as a higher order construct because it is not directly measured. However, the four dimensions of trust in news media outlined above are of a lower order or less abstract factors that are presumed to be caused by the higher order factor (Rindskopf & Rose, 1988). In other words, the first-order factors have a common cause that accounts for their intercorrelation.² In confirmatory factor analysis, it is possible to test hypotheses about such hierarchical relations among the factors (Bollen, 1989; Noar, 2003; Rindskopf & Rose, 1988). In these so-called second-order hierarchical factor analytical models, a factor of higher order directly affects the lower order factors. In contrast to the lower order factors, the second order factor has no manifest indicators. Therefore, the following hypothesis can be formulated:

Trust in news media is a hierarchical factor (of second order), which serves to explain the factors (of first order) "trust in the selectivity of topics," "trust in the selectivity of facts," "trust in the accuracy of depictions," and "trust in journalistic assessment."

This hypothesis seeks to provide evidence that the correlational structure of the measure is consistent with the hypothesized four-dimensional structure of the construct. The postulated factorial model should therefore be superior to any other alternative model. It should be noted that in hierarchical confirmatory factor analysis, it is common to literally test hypotheses concerning hierarchical relations (Bollen, 1989). The idea is that the second-order factor explains the first-order factors. In principle, the logic behind hierarchical factor analysis is just the same as in classic nonhierarchical factor analysis; there are measures for manifest variables (items), and when these variables correlate, this is interpreted as a factor (Gorsuch, 1983). The factor itself cannot be directly measured—it is a latent dimension. Likewise, in hierarchical factor analysis, the correlation of first-order factors can be interpreted as a second-order factor (Bollen, 1989). The crucial advantage of hierarchical confirmatory factor analysis is that it enables the researcher to model and measure latent variables that are quite abstract, such as trust. Furthermore, one can determine the

exact amount of variance that each first-order dimension contributes to the measure of the second-order dimension.

Method

Scale construction is an iterative process that closely combines the development of theory and data (Clark & Watson, 1995, p. 311; John & Benet-Martinez, 2000, p. 363; Reise, Waller, & Comrey, 2000, p. 288). On the basis of a theoretical model, items are developed and assigned to the respective factors. The structure of the factors is examined, improved, then tested on other data and, if necessary, modified. This process is only (temporarily) completed when a data-guided developed model has undergone a cross-validation analysis (Breckler, 1990, p. 267). Therefore, the following sections will focus on the methodical procedures used in different pilot studies as well as the main studies.

Pilot Studies

We conducted several pilot studies, which will be briefly summarized in the next section. To operationalize the proposed multiple-factor model, it seemed wise to combine a qualitative procedure with a quantitative procedure (Tashakkori & Teddlie, 1998). This combination not only optimizes item phrasing and stimulates hypothesis development, but it also takes differing aspects of trust into account. Consequently, the first pilot study encompassed qualitative interviews with 27 persons, which specifically implemented the previously introduced theoretical concept. Open questions were meant to explore the interviewees' expectations of news media reporting as well as the relevance and assessment of the four trust factors. A content analysis of the interviews showed that the interviewees in fact expected, perceived, and distinguished among the four dimensions of trust in news media. Furthermore, the interviews were used to generate an item set of 50 statements. These items were applied in our second pilot study, which was a standardized survey with a random sample of 303 adults (48% female). The participants answered questions concerning the news media coverage of the new European currency, "Euro." Exploratory and confirmatory factor analysis provided essential support for both the theoretical concept and the selection of items (Matthes & Kohring, 2003). Moreover, this study enabled the improvement of individual item phrasing.

To continually improve the phrasing of existing items and to generate new ones, 30 additional qualitative interviews were conducted that lasted between 30 minutes to 1 hour. Based on these results, a standardized questionnaire was developed that underwent first a cognitive pretest ($n = 20$) and then a pretest by phone ($n = 78$). These pretests were carried out by the Centre for Survey Research and Methodology (ZUMA) at the University of Mannheim (Germany). Of the 17 original items in the

pilot study, 9 were directly adopted or slightly modified. Eight items were completely rephrased; that is, the basic aspect of the item was expressed differently. Decisive for these measures was the semantic distinction of items (Clark & Watson, 1995; Osterlind, 1998). This was to avoid factors that would result from identical words in particular items. In addition, all those items that had exhibited a low factor loading in the previous study or that were too long for a telephone interview received new or rephrased wording.

Main Studies

The postulated factor structure was tested in two independent surveys by confirmatory factor analysis, a structural equation modeling (SEM) technique. Confirmatory factor analysis has taken on a major role in scale development as it can greatly enhance confidence in the structure and psychometric properties of a new measure (Noar, 2003). The first survey, conducted in Schwerin, Germany ($n = 510$), served as an initial test for the specific model of trust in news media. It was, however, expected that the model would require some modification. After these modifications, the new structure was to be tested on a second, independent random sample, conducted in Berlin, Germany ($n = 812$).³ This cross-validation was an essential step in the scale construction process because modification (i.e., a so-called specification search) must be recognized as a data-driven process that inhibits generalization of other samples. "Therefore, the specification search process is inherently susceptible to capitalization on the chance that idiosyncratic characteristics of the sample may influence the particular modifications that are performed" (MacCallum, Roznowski, & Necowitz, 1992, p. 491; also see Gerbing & Hamilton, 1996, p. 71; Kline, 1998, p. 216).

The questionnaire was programmed to be applied as a CATI (Computer Assisted Telephone Interview). To avoid order effects, items were randomly rotated. For the sampling procedure, a method was applied that would facilitate a simple random selection of households with telephone connections in consideration of nonlisted numbers (Gabler & Hader, 2002). The surveys in Schwerin and Berlin took place concurrently from late June to early July 2002. The questions were answered on a 7-point scale with an additional "don't know" option. Participants were told that unemployment was the topic of the study, first, to avoid reactivity concerning the topic of trust and, second, to generate a cognitive reference for their answers regarding news media coverage. The interviewees were to answer in regard to their main source of journalistic information. Our main interest was the structure of trustworthiness judgments, which we hoped to detect in these rather definitive, nonfleeting trust relationships. Regarding the specific news media use, as well as the specific topic of interest, we can assume a concrete and stable point of reference for trustworthiness judgments.

Both studies were analyzed with (hierarchical) confirmatory factor analysis with maximum-likelihood (ML) parameter estimation. The data were tested for univariate

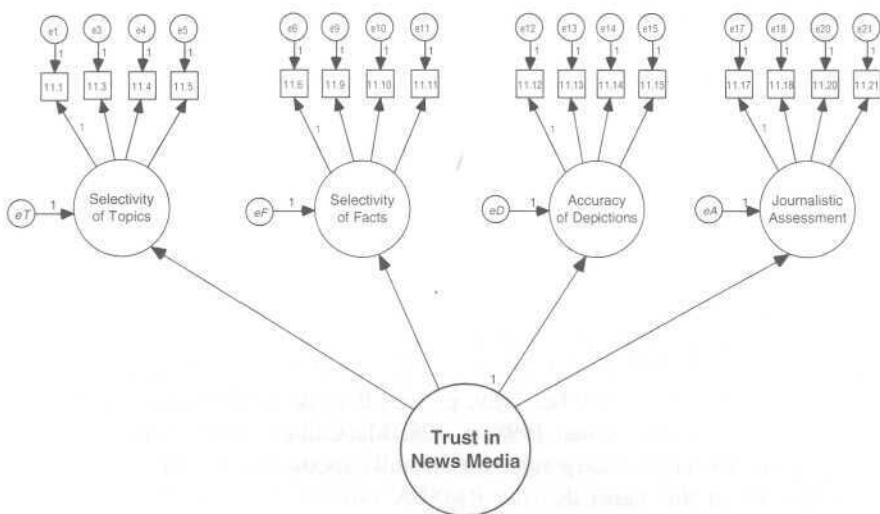
normal distribution. Extreme infringements on the assumption of the univariate distribution are associated with skew values of at least 3 and kurtosis values of at least 20 (Kline, 1998, p. 82; S. G. West, Finch, & Curran, 1995, p. 62) and a moderate or substantial deviation with a skew of at least 2 and kurtosis of at least 7 (S. G. West et al., 1995, pp. 68 and 74). Both values were not even closely reached in our samples. On this basis, we also assume that the necessary presumptions of the multivariate distribution for the ML method have been met. Missing values were also estimated with the maximum likelihood method, also known as full information maximum likelihood (Arbuckle & Wothke, 1999). This method produces reliable estimated values, compared to other replacement procedures, even under the less strict missing at random assumption (Byrne, 2001, p. 292; Enders & Bandalos, 2001; Schumacker & Lomax, 1996, p. 5).⁴ To evaluate the model fit, the following criteria were incorporated: the chi-square value divided by the number of degrees of freedom ($\chi^2/df < 3$), the comparative fit index ($CFI > .95$), the root mean square error of approximation ($RMSEA > .05$) and the p value for the test of closeness of fit (PCLOSE) (Arbuckle & Wothke, 1999, p. 403; Browne & Cudeck, 1993, p. 144; Byrne, 2001, pp. 83-84; Kline, 1998, p. 128; MacCallum, Browne, & Sugawara, 1996, p. 134). The latter is the p value for the null hypothesis (which is preferred not to be rejected in this case) that the RMSEA value is $< .05$ (PCLOSE $> .05$).⁵ Furthermore, the factor loading of an indicator should be, by convention, higher than .6, and the indicator reliability or the variance of an indicator that is explained by its factor should be $> .4$.

Results

Model Development

The first survey in Schwerin encompassed 510 interviews. Interviews with an extremely short response period and those that displayed an extremely monotonous answering pattern of trust items were excluded.⁶ Therefore, the final sample encompassed 487 interviews. Of the interviewees, 51.3% were female, and the average age was 48.8. The Schwerin sample overall had an above-average number of higher educational degrees. However, a quota sampling was rejected as there were no theoretical grounds to support its application. Although the fit indices for the whole structural equation model were good, some indicators were not satisfactory. Based on the so-called modification indices, 5 of the total 21 variables were eliminated. The resulting modified model is depicted in Figure 2. The precise item phrasing and its factor loadings and indicator reliabilities are shown in Table 2. The fit indices for the modified model absolutely satisfy the level of aspiration: $\chi^2/df = 2.407$; $CFI = .995$; $RMSEA = .044$; $PCLOSE = .914$. We tested this model against a single-factor model that contains one factor that explains all 16 items ("nested model comparison";

Figure 2
Modified Measurement Model “Trust in News Media”



Note: See Table 2 for variables.

Arbuckle & Wothke, 1999). By means of nested model comparison, we can run a test to determine which theoretical model has the best fit to the data. In other words, it is tested whether trust in news media is one or four dimensional. As a result, we found that the four-factor model, as depicted in Figure 2, fits the data significantly better.

Model Validation

As outlined above, the data-guided procedure used in modifying the structural equation model requires the factorial structure to be validated on an independent random sample (Kline, 1998, p. 216; MacCallum et al., 1992, p. 491). The factorial invariance across the two samples was verified in the concurrent Berlin survey. This survey covered 812 interviews, of which 727 cases were finally selected in the same manner as described above. Of the participants, 54.2% were female, and the average age was 46.9. As in Schwerin, an above-average number of participants in this group had also attained higher educational degrees. The fit indices that were calculated for the postulated model according to the level of aspiration are highly satisfactory: $df = 1.633$; CFI = .997, RMSEA = .036; PCLOSE = .998. In a series of multiple-group analyses (see Byrne, 2001), we tested the invariance of measurement weights,

Table 2
Items, Factor Loadings, and Indicator Reliabilities of the Scale “Trust in News Media”

	Items	Schwerin		Berlin	
		λ	IR	λ	IR
Latent factor					
Selectivity of topics					
	The topic of unemployment (UE) receives the necessary attention. (11.1)	.725 .789	.526 .623	.792 .732	.627 .536
	The topic of UE is assigned an adequate status. (11.5)	.748	.560	.769	.591
	The frequency with which UE is covered is adequate. (11.3)	.689	.475	.709	.503
	The topic is covered on the necessary regular basis. (11.4)	.672	.452	.748	.559
Selectivity of facts					
	The essential points are included. (11.9)	.981 .710	.962 .504	.995 .709	.990 .503
	The focus is on important facts. (11.11)	.685	.470	.696	.484
	All important information regarding the topic of UE is provided. (11.10)	.658	.432	.646	.418
	Reporting includes different points of view. (11.6)	.601	.361	.583	.339
Accuracy of depictions					
	The information in a report would be verifiable if examined. (11.15)	.868 .721	.753 .519	.857 .723	.743 .523
	The reported information is true. (11.12)	.715	.512	.742	.550
	The reports recount the facts truthfully. (11.13)	.706	.499	.757	.573
	The facts that I receive regarding UE are correct. (11.14)	.583	.340	.675	.456
Journalistic assessment					
	Criticism is expressed in an adequate manner. (11.20)	.948 .664	.900 .441	.929 .673	.863 .453
	The journalists' opinions are well-founded. (11.21)	.660	.436	.689	.474
	The commentary regarding unemployment consists of well-reflected conclusions. (11.18)	.657	.432	.694	.482
	I feel that the journalistic assessments regarding the topic of unemployment are useful. (11.17)	.625	.390	.595	.355

Note: Factor loadings (λ) and indicator reliabilities (IR, i.e., squared multiple correlations) of the modified (Schwerin) and confirmed scale (Berlin).

measurement intercepts, structural weights, and structural residuals. All these parameters are found to be invariant across both samples. These results clearly support the validity of the scale.

The scale used to measure trust in news media could thus be validated with an independent random sample. The hypothesis that trust in news media is to be considered a hierarchical factor (of second order) that explains the factors (of first order) of trust in the selectivity of topics, trust in the selectivity of facts, trust in the accuracy of depictions, and trust in journalistic assessment could therefore be verified. Table 2 lists the factor loadings, the explained variance of first-order factors, and the items of trust (indicator variables) for the Schwerin and Berlin sample. The value $A = .789$ of the first-listed item (11.1) shows the extent of this item's loading on the factor selectivity of topics. The value $.623$ (squared multiple correlation) directly beside it indicates that the latent first-order factor, selectivity of topics, accounts for 62.3% of the variance of this manifest item. The value $.526$ (squared multiple correlation) of this factor indicates that 52.6% of the variance of this factor is explained by the hierarchical factor of trust in news media. Altogether, the relatively high factor loadings and indicator reliabilities (or squared multiple correlations) of nearly all items indicate a very reliable measurement of the construct. Also, the often-criticized (Clark & Watson, 1995, p. 316), but nonetheless common coefficient, Cronbachs alpha is highly satisfactory for the individual factors:

1. Selectivity of topics: .825 (Schwerin) and .830 (Berlin)
2. Selectivity of facts: .754 (Schwerin) and .758 (Berlin)
3. Accuracy of depictions: .769 (Schwerin) and .817 (Berlin)
4. Journalistic assessment: .742 (Schwerin) and .754 (Berlin)

The factor "trust in the selectivity of topics" describes the trust in the news media's role in making certain topics subjects of public discussion. It encompasses four variables that are related to the frequency and continuity of the covered topic as well as the appropriate emphasis of this issue compared to others. The factor "trust in the selectivity of facts" comprises the contextualization of events. It includes four variables that relate to the variety, comprehensiveness, and emphasis of the information, which has been provided for a chosen topic. The factor "trust in the accuracy of depictions," with its four variables, solely concerns the empirical verification of factual information. The fourth factor, "trust in journalistic assessment," encompasses four variables that relate to the comprehensibility, usefulness, and appropriateness of journalistic commentary (not only in reference to the display format of commentary). Commentary enables an evaluative and thus highly informative classification of events.

The latent factors, trust in the selectivity of facts and trust in journalistic assessment, are strongly accounted for by the superordinate factor of second order trust in news media (up to 96% and 90%; see Table 2). These two factors basically compose

the core of the latent factor trust. The factor "trust in the selectivity of topics" exhibits the comparatively weakest relation to the subordinate trust factor.

Discussion

The aim of this article is to depict the development and validation of a multidimensional scale for the assessment of trust in news media. In previous research, there is no standardized, reliable, and validated scale for the measurement of trust in news media. However, scholars interested in trust have so far relied on the construct credibility. As we have shown in our literature review, previous attempts to operationalize credibility suffer from several theoretical and methodological shortcomings. Neither the comparative nor the factor analytical approach presents a precise theoretical development of its core concepts. Furthermore, the concept of credibility is inductively defined in most factor analytical studies as merely depending on the current factor solution. The understanding of the concept of credibility is thus left to the study's reader. Likewise, the comparative approach on media credibility offers no definition of credibility, nor is it embedded in some genuine theoretical framework. The Yale studies on source credibility posit two genuine credibility dimensions. However, it remains unclear whether these concepts are actually dimensions of credibility or rather antecedents or predictors of credibility. Researchers often have been inattentive to these differences, and consequently, research progress has been unnecessarily impeded. Based on this critique, this article sought to extend this body of work by embedding the concept of credibility in both theories of trust and journalism.

We presented the development and validation of a trust in news media scale. We tested our theoretically derived hierarchical factor model on two independent samples by confirmatory factor analysis. The results of the first sample showed that some items had to be excluded from the scale to attain model fit. This modified model was then tested on another random sample. As a result, we could validate the postulated factor structure on an independent sample. Furthermore, nested model comparison showed that the depicted model is superior to a one-factorial model. That underlines the discriminant validity of the scale. Trust in news media is thus considered a hierarchical factor (of second order), which includes the factors (of first order) "trust in the selectivity of topics," "trust in the selectivity of facts," "trust in the accuracy of depictions," and "trust in journalistic assessment."

However, there remain some unresolved issues, each of which warrants further inquiry. First of all, as all items were formulated in regard to the issue of unemployment, the next question is how the scale is applicable to different conditions. This refers to the interviewee's profile of news media use as well as to the survey's underlying topic. In this study, the interviewees were to answer in reference to their main

source of journalistic information. Under these conditions, relatively habitual trust and a high factor correlation can be expected. An additional particularity of the study was the personal experience of interviewees regarding the issue of unemployment. Unemployment can be considered as an obtrusive issue. The more an issue does not relate to personal experience, the greater the role that trust plays in the relationship between journalists and recipients. Other issues, such as foreign policy, would be expected to yield a more differentiated factor structure. This could in fact be shown in an additional test of the scale ($n = 980$), which was carried out on political news coverage with current and past readers of a local newspaper. Moreover, this study also confirmed the scale, which thus proves to be applicable to other issues and news media.

These insights suggest that the scale presented herein is the first theory-derived, successively validated scale in credibility and trust research. Previous research on media credibility proceeded mostly inductively without methodic considerations concerning the operationalization of complex constructs. To establish and empirically confirm a standardized concept of trust in news media, a confirmatory, instead of another explorative, approach (as it is still common in many scale developments in the communication sciences; Holbert & Stephenson, 2002) is ultimately needed. The introduced scale not only facilitates a reliable evaluation of trust but also a comprehensive and valid depiction of judgments regarding trust. A number of applications of the scale thus become possible, such as a comparison of trust values of different news media, the targeted diagnosis and therapy of trust deficits, the long-term observation of trust in news media for the diagnosis of societal processes, and the yet-to-be realized functional integration of the construct into the study of media effects (e.g., Tsafati, 2003). Special attention should also be dedicated to the international validation of the scale. Such an internationally validated instrument would provide communication science with new perspectives for urgently needed internationally comparative research.

Notes

1. According to the standards reported in the statistical literature, AGFI and GFI should be $> .9$ (Byrne, 2001; Kline, 1998).

2. This hypothesis corresponds to the idea of reflective measurement common in classical test theory, reliability estimation, and factor analysis (Edwards & Bagozzi, 2000). Reflective measurement means that measures (i.e., items) represent reflections or manifestations of a construct. Put differently, answers to items are caused or reflected by the construct (as indicated by the arrows in Figure 2). That means that the 16 single items of our scale are reflective measures of the respective four lower order factors. Likewise, the four lower order factors are reflections of trust; that is, they are explained by the hierarchical factor. In contrast to reflective measures, formative measures explain the construct. However, formative measures are only used for constructs conceived as composites of component variables, such as socioeconomic status (Edwards & Bagozzi, 2000).

3. These surveys were conducted by the Center for Sociological Surveys, Gerhard Mercator University Duisburg, Germany.

4. In the modification of the Schwerin model, the method of mean value replacement was also applied, as the program AMOS (Analysis of MOment Structures) only shows the so-called residual moments and modification indices, if complete data are available.

5. A value of PCLOSE = .05 only signifies the minimum level of PCLOSE. Merely a value of PCLOSE $> .5$ indicates a good RMSEA value (Byrne, 2001, p. 85). If PCLOSE is less than .5, then the upper end of the confidence interval of RMSEA is clearly greater than a value of .05 (only a value of .05 and less indicating a good fit).

6. We excluded cases that literally gave the same score to any of the more than 100 questions in the questionnaire (independent of question type) and at the same time were extreme outliers regarding answering time (i.e., extremely fast). Moreover, we checked the answering pattern of every deleted case for face validity. Obviously, these respondents tried to complete the survey as fast as possible and did not seriously answer the questions.

References

- Al-Makat, S. S., Boyd, D. A., & van Tubergen, G. N. (1994). Source credibility during the Gulf War: A Q-study of rural and urban Saudi Arabian citizens. *Journalism Quarterly*, 71, 55-63.
- American Society of Newspaper Editors. (1985). *Newspaper credibility. Building reader trust*. Minneapolis, MN: MinnesotaOpinionResearch.
- Arbuckle, J. L., & Wothke, W. (1999). *Amos 4.0 user's guide*. Chicago, IL: Small Waters.
- Arnett, C. E., Davidson, H. H., & Lewis, H. N. (1931). Prestige as a factor in attitude change. *Sociology and Social Research*, 16, 49-55.
- Asch, S. E. (1948). The doctrine of suggestion, prestige, and imitation in social psychology. *Psychological Review*, 55, 250-276.
- Barber, B. (1983). *The logic and limits of trust*. New Brunswick, NJ: Rutgers University Press.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Bowden, A. O., Caldwell, F. F., & West, G. A. (1934). A study in prestige. *American Journal of Sociology*, 40, 193-204.
- Breckler, S. J. (1990). Applications of covariance structure modeling in psychology: Cause for concern? *Psychological Bulletin*, 107, 260-273.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS. Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum.
- Carter, R. F., & Greenberg, B. S. (1965). Newspaper or television: Which do you believe? *Journalism Quarterly*, 42, 29-34.
- Chanley, V. A., Rudolph, T. J., & Rahn, W. M. (2000). The origins and consequences of public trust in government. A time series analysis. *Public Opinion Quarterly*, 64, 239-256.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.
- Cronkhite, G., & Liska, J. (1976). A critique of factor analytic approaches to the study of credibility. *Speech Monographs*, 43, 91-107.
- Earle, T. C., & Cvetkovich, G. T. (1995). *Social trust. Toward a cosmopolitan society*. Westport, CT: Praeger.
- Edwards, J. R., & Bagozzi, R. P. (2000). On the nature and direction of relationships between constructs and measures. *Psychological Methods*, 5, 155-174.
- Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling*, 8, 430-457.

- West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables. Problems and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56-75). Thousand Oaks, CA: Sage.
- Westley, B., & Severin, W. (1964). Some correlates of media credibility. *Journalism Quarterly*, 41, 325-335.

Matthias Kohring (PhD, University of Munster, Germany) is a professor in communication science at the Department of Communication Science, University of Munster, Germany. His research focuses on communication theory, trust in news media, and science communication.

Jorg Matthes (MA in psychology, University of Jena, Germany) is a doctoral candidate at the Institute of Mass Communication and Media Research, University of Zurich, His research focuses on the process of public opinion formation, media effects, and trust in news media.

Fonte: Communication Research, v. 34, n.2, p. 231-252, Apr. 2007.