ARE AUSTRIAN RADIO WEATHER WARNINGS USER-FRIEDLY?

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I. INTRODUCTION

„Oe3 (Austrian Radio 3) weather warning: today, tonight, tomorrow morning severe gusts around 130 kmh, on mountains 180... in the afternoon increasing wind speed, widespread damage possible, wind speed will decrease tomorrow afternoon ...“

These are parts of a ORF Austrian radio short severe weather warning. The whole message took 32 seconds. Was it understood by listeners? Severe weather forecasting and warning has to send an intelligible message via mass media (NDIS, 200).

Media weather forecasters know that they are major science communicators (Wilson, 2008), that their reports reach a broad audience with different perception habits and motivation (Neumann&Russell, 1976; Ayton, 1988; Berland, 1994; Doswell, 2003) and that their presentation modes makes the difference, even for professional users (Keul, 1980; Wehry, 1998; O'Hare&Stenhouse, 2009; Wostal, 2009).

Wagenaar and Visser (1979) criticized a standard forecast as too long for effective storage in memory. Out of 12-32 items per message, only a maximum of 5-9 could be reproduced. Selective listening further reduced recalled items. Bulliard and Reeder (2001) found that self-reported understanding of broadcast UV burn times (96%) was higher than measured comprehension (65%) which is called „overconfidence". Gigerenzer et al. (2005) pointed out problems with the understanding of probabilistic forecasts (,30% chance of rain") for untrained people.

Consequently, further research is needed to optimize the format of weather news reports, particularly in the case of severe weather warnings. Existing tests were mostly done by weather professionals, only few by linguists (Sevchenko & Uglova, 2006) or psychologists.

II. PRESENTATION OF RESEARCH

In 2008, a field experiment was organized by Salzburg University in cooperation with ORF, the Austrian Broadcasting Corporation. The second and third authors are Vienna senior radio forecasters, the first author a Salzburg environmental psychologist, the fourth, fifth and sixth authors students of his social research seminar.

The experiment used four Vienna ORF radio weather reports spoken by the third author. Two of them dealt with fair weather, two with severe weather (approach of a major storm), each of the pairs in a long and a short version.

62 (mostly rural) interviews took place in Upper Austria and Salzburg Province with 31 male and 31 female respondents. The mean age was 38.7 years (range: 17-75 years). The quota sample was listening to four ORF radio tape versions (fair weather 31 sec. „short"/56 sec. „long", storm 32 sec. „short"/52 sec. „long"). One of the four weather reports was played at random for every subject who was asked to repeat the message immediately afterwards in their own words. 37 replies were tape-recorded for content analysis. Although the experimental situation with historical information did not closely resemble real life, it was expected that the arousing severe weather reports would be better remembered.

After the recall experiment, a questionnaire asked for additional information on personal weather interest, media use and other topics not reported here.

III. RESULTS AND CONCLUSIONS

Two transcript examples:

Male, city, >40 yrs: „A Ö3 [Austria radio 3] weather warning ... heavy wind to come, mostly in higher regions. Speed 130, it will happen in the night to Saturday and Saturday the weather will calm down." *Warning identified, windspeed correct, time error (storm starting in the night to Friday, not Saturday)*

Female, rural, >40 yrs: „Oh god, a heavy storm warning. Saturday is the peak, Sunday it will calm down." *Warning identified, time error (peak on Friday, calming down Saturday)*

Of the sample of 62 subjects, 10% remembered no information at all, 43% recalled general information and 47% also report details (correct: 2 to 4, incorrect: 1). No statistical differences existed between remembered fair- and severe-weather reports as well as between report lengths. Gender, age and education had no influence on recollection. Rural residents recalled significantly more data than city residents [Chi²=11.49, p<.01].

For a comparative content analysis of the original warning texts versus transcripts of 37 taped respondent texts, three codes were used:
A+ general weather situation identified
D+ weather detail correctly recalled
D- weather detail falsely recalled

Test run	n	A+	D+ / D-
Fair-weather, short	9	6	17 / 4
fair-weather, long	10	4	14 / 6
stormwarning, short	9	7	14 / 3
stormwarning, long	9	8	20 / 7
sum	*37*	*25*	*65 / 20*

TABLE 1: Results of 37 tape-recorded memory tests.

Table 1 shows the cumulative absolute values for the memory tests. The mean weather situation (A+) recall for short reports was FW 67% and SW 78%. For long reports, it was FW 40% and SW 89% – fair-weather was better memorized in the short report, stormwarning recall was equal for short and long reports.

Table 1 gives the absolute numbers for correct weather details (D+). For short reports, the means are FW 1,9 versus SW 1,6; for long reports, FW 1,4 versus SW 2,2 – more fair-weather details were recalled for short reports, more stormwarning details for long reports.

Table 1 also contains the cumulative absolute numbers for falsely remembered weather details (D-). For short reports, the mean false weather details are FW 0,4 versus SW 0,3; for long reports they are FW 0,6 versus SW 0,8 – more false details appear after long reports.

Test run	ORF words	male mean	female mean
Fair-weather, short	51	27.2	26.8
fair-weather, long	101	32.6	32.4
stormwarning, short	35	31.0	36.3
stormwarning, long	120	52.2	37.3

TABLE 2: Results of 37 tape-recorded memory tests.

Looking at the ORF message number of words compared to what subjects recounted, the differences for FW and SW, for males versus females are not impressive except for males recalling the long stormwarning in more detail.

The questionnaire after the experiment also asked for the media channels used for every day weather information compared to a severe weather situation. Table 3 gives the ranks of prefered media for weather warnings – high-speed media like TV and radio are on top, followed by text media.

1. ORF television
2. ORF radio Ö3 (Austria3)
3. ORF teletext
4. Internet www.wetter.at
5. ORF regional radio

TABLE 3: Information ranking for severe weather

This emphasizes the importance of readability and intelligible wording of the message for lay people. Without paying enough attention to communication quality, weather information can stimulate rumours, false comfort or false alarms. More qualitative and experimental research, also on TV weather, seems justified.

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