

Hearing Impairment, Sense of Humour and Communication Strategies

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ABSTRACT One purpose of this study was to describe sense of humour and communication strategies in a general population of adults who needed hearing aid (HA) fitting or refitting. Another purpose was to explore the correlation between characteristics of hearing impairment (HI), sense of humour, and other participant characteristics and the communication strategies as outcome. Consecutive patients ($n = 343$) at the Department of Audiology during 1 year completed the Sense of Humour Questionnaire-6 (SHQ-6) and the Communication Strategies Scale (CSS with maladaptive behaviour, verbal and non-verbal strategies). It was found that a high sense of humour was related to female gender and younger age. In multiple regression analyses, use of non-verbal communication strategies was more prevalent among females and increased with younger age, longer duration of HI, and previous HA experience. Use of verbal communication strategies and maladaptive communication behaviour increased with increasing HI. Use of verbal strategies was further associated with younger age and previous HA experience. Frequent use of maladaptive behaviour was related to younger age, longer duration of HI and less sense of humour. Maladaptive behaviour, alternatively expressed as negative reactions to stressful events in communication, was negatively associated with sense of humour. This study may indicate a role for sense of humour in prevention of maladaptive behaviour. It may also improve our understanding of what factors influence the use of communication strategies.

For individuals with hearing impairment (HI), daily coping in terms of cognitive and behavioural efforts aimed at minimizing, reducing, or tolerating threats (Lazarus & Folkman 1984), is centred on their demanding auditory situation. Use of communication-specific coping strategies, such as lip-reading, remaining silent and asking for repetition, is widespread (Dancer, Krain, Thompson, Davis & Glenn 1994, Hallberg & Carlsson

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1991, Jaworski & Stephens 1998). These strategies are similar to the general coping strategies identified by Folkman and Lazarus (1980) as problem-focused and emotion-focused strategies. The situation in which a strategy occurs and the effect of the behaviour it elicits, decide whether a strategy is effective or not, rather than its use *per se* (Lazarus & Folkman 1984). For example, silence or avoidance as a response in communication may be face-saving (Jaworski & Stephens 1998), but may not be seen as effective for communication. Demorest and Erdman (1986) reported three categories of communication strategies aimed to compensate for problems hearing impaired adults experience in communication. Two of these categories, the verbal and non-verbal strategies, were effective to promote communication while the third, maladaptive behaviour, interfered with effective communication. The Communication Strategies Scale (CSS) by Demorest and Erdmann has been used extensively (e.g. Hallberg, Eriksson-Mangold & Carlsson 1992, Andersson, Melin, Scott & Lindberg 1995, Erdman & Demorest 1998, Garstecki & Erler 1999, Hallberg 1999, Barrenäs & Holgers 2000). Some of these authors have reported a gender-specific aspect in the use of communication strategies (Erdman & Demorest 1998, Garstecki & Erler 1999, Hallberg 1999), but not all of them had adjusted for other participant characteristics or for degree of HI. One paper reported that more frequent use of communication strategies was both related to an increase in HI and younger age (Erdman & Demorest 1998). However, the impact of other audiological or personal characteristics on the use of communication strategies has neither been extensively explored nor confirmed.

In addition to coping strategies, personal characteristics influence coping (Hewitt & Flett 1996, Lazarus & Folkman 1984). Some of them could be seen as positive resources to retain (Antovnosky 1996) and moderate stress (Lazarus & Folkman 1984). Sense of humour, as a positive coping resource, has come into focus over the last decade or so (e.g. Martin & Lefourt 1983, Hudak, Dale, Hudak & DeGood 1991, Svebak & Martin 1997). High sense of humour may allow one to focus less on the negative elements of an event, minimize the impact of negative thoughts induced by a stressful event, or avoid some of the negative reactions (Cann, Holt & Calhoun 1999). Cann et al. (1999) carried out a three-stage study with four different humour inventories and found the Sense of Humour Questionnaire by Svebak (1974a) to be the most useful one in the study of negative emotional reactions to stressors. One aim of this study was to describe sense of humour and communication strategies in a general population of adults who needed hearing aid (HA) fitting or refitting. Another aim was to study the correlation between sense of humour, some HI characteristics, and participant conditions on the one hand and communication strategies on the other. It was hypothesized that the study could confirm and expand the understanding from earlier reports concerning the impact of audiological and participant characteristics on the use of communication strategies, and that high sense of humour adjusted for such characteristics is inversely related to frequent use of maladaptive communication strategies.

Material and Methods

Subjects

The study sample consisted of 343 individuals (188 men and 155 women) aged 20 years or over from the Outpatient Department of Audiology, St Olavs University Hospital, Trondheim, Norway. They were recruited from consecutive patients on the waiting list for audiological examination and medical consultation for HA fitting or refitting over a 1-year period (May 2002 to April 2003). The inclusion of subjects followed an initial clinical assessment by an ear, nose and throat (ENT) physician. In all, 474 patients were invited to participate, but as a result of the recruitment procedure, 50 did not need or want treatment, 59 were excluded because of severe illness or poor Norwegian language skills, and 22 abstained.

Some characteristics of the study sample are shown in Table 1. The age range was 21–94 years, with a mean for the total sample of 69.0 years (SD 13.8). There was no difference in mean age between men (68.0 years, SD 13.5) and women (70.1 years, SD 14.2) ($p > 0.05$). However, women had significantly less education ($p < 0.05$), as assessed by the following three levels: low (completed 10 years or less), medium (11–13 years) and high (14 years or more).

Table 1. Characteristics of study sample by gender

		Males	Females
Number	<i>n</i>	188	155
Age	Mean (in years)	68.0	70.1
	SD	13.5	14.2
Level of education [†]	7–10 years	84	90*
	11–13 years	64	34
	>13 years	40	29
<i>Audiological</i>			
Degree of HI [‡]	Mean (in dB)	42.0	45.0
	SD	16.6	16.8
Previous HA [§] experience	<i>n</i> (yes/no)	84	86*
	%	44	55
Sensorineural HI [‡]	<i>n</i> (yes/no)	178	133
	%	95	86
Tinnitus	<i>n</i> (yes/no)	81	54
	%	43	35
Experienced duration of HI [‡]	Mean (in years)	15.0	15.0
	SD	13.0	16.0

*Level of significance between genders; $p < 0.05$.

[†]No information on two subjects.

[‡]HI = hearing impairment.

[§]HA = hearing aid.

The pure-tone threshold at 0.5–1–2–4 kHz in the better ear forms the mean threshold (MTH) and describes the degree of HI (Martini 1996). Acoustic equipment to measure HI was calibrated according to ISO standards (ISO 389-1 1998, ISO 389-3 1994) following recommended procedures (ISO 8253-1 1989). The overall mean threshold of hearing in the better ear was 43.4 dB (SD 16.7). Men and women did not differ in mean degree of HI (i.e. 42.0 dB, SD 16.6 and 45.0 dB, SD 16.8, respectively; $p > 0.05$). Half of the patients (170/343) had a previous HA experience with a larger proportion of women than men (86/155 versus 84/188; $p < 0.05$). There were no gender differences in terms of the aetiology of HI (i.e. sensorineural, conductive, or mixed) recorded by the ENT physician, reported tinnitus prevalence (yes/no), or the experienced duration in years of HI ($p > 0.05$).

Coping Measurements

Coping with HI is influenced by an individual's coping resources and the use of certain coping strategies. Self-reported questionnaires were used to ascertain both characteristics.

Coping Resource: Sense of Humour

The Sense of Humour Questionnaire-6 (SHQ-6) measures the individual's total sense of humour (Svebak 1996). The SHQ-6 includes three cognitive and three social items. All are measured on a four-point Likert-scale from 4 (highest) to 1 (lowest). The cognitive factor is measured by three questions (how easily respondents find something comical, witty or humorous in situations, how easily they recognize a hint as a mark of humour intent, and the amount of humour they experience during an ordinary day). The social factor is measured by three statements (whether humorists are irritating because they so blatantly revel in getting others to laugh, whether persons who are always funny are not to be relied on, and whether people who try to be funny do it to hide their lack of self-confidence). The sum is calculated as the total sense of humour score for an individual with a maximum score of 24.

The SHQ-6 (Svebak 1996) is a revised and shortened version based on a development of the original inventories (Svebak 1974a,b). It has been psychometrically tested on a Norwegian population of 995 young adults with a Cronbach's alpha on overall internal consistency reliability of 0.85 (Svebak 1996).

Coping Strategies: Communication Strategies

The Communication Strategies Scale (CSS) of the Communication Profile for Hearing Impaired (Demorest & Erdman 1986, Demorest & Erdman 1987) consists of 25 items and attempts to assess three types of communication strategies: "Verbal Strategies" (8 items), "Non-Verbal Strategies" (8 items) and "Maladaptive Behaviour" (9 items). The verbal and

non-verbal subscales aim to indicate behaviours that either acknowledge or compensate for the problems associated with HI in an adaptive manner. The maladaptive behaviour subscale measures how often a behaviour that interferes with effective communication occurs. It consists of items that show how a person pretends to understand, avoids communication situations, or tries to dominate conversations. The five-point response scale rates from “almost never” (1) to “almost always” (5). Scores for maladaptive behaviour was reversed prior to statistical analysis, which implies that low scores indicate problems with effective communication (Demorest & Erdman 1989).

The authors reported Cronbach’s alpha for internal consistency reliability for the verbal and non-verbal strategies to be 0.77 and 0.88, respectively, whereas it was 0.77 for maladaptive behaviour (Demorest & Erdman 1987). A Swedish study which applied the CSS among a group of 199 individuals with HI, found that Cronbach’s alpha was 0.77 for maladaptive behaviour and 0.72 and 0.75 for verbal and non-verbal strategies, respectively (Hallberg et al. 1992). This compares favourably with the results of Demorest and Erdman (1987). While the CSS had not been used in Norway before, we experienced that it was possible to provide a Norwegian translation and to employ it in a standard clinical setting. Hence, we expect that a later, formal evaluation will compare favourably with the Swedish one, since that country has a quite similar cultural and linguistic make-up to Norway.

Norwegian Version of CSS

Prior to this study there was no Norwegian version of the CSS. Thus, the separate items were translated into Norwegian independently by two experienced professionals who then compared the translations to each other’s. Consensus was obtained for items with differing wordings before the Norwegian version was translated back into the original language (English) by an ENT physician and compared with the original inventory. This procedure was in line with an internationally accredited translation process (Werner & Campbell 1973). The Norwegian version of the scale was compared with the Swedish one, since those languages are quite close, and deemed similar in all practical respects. Finally, the CSS was successfully piloted among 8 patients and 12 students who were about to finish their Bachelor of Audiology degree.

Procedure and Ethical Considerations

The patients were informed by post about the purpose of the study and invited to participate. They were asked to come 30 minutes before their scheduled appointment for further information and inclusion. Additional oral information was given by the first author, who then obtained a written informed consent from the participants and presented the self-report questionnaires. The study was approved by the regional committee for medical research ethics.

Statistical Analysis

Data were analysed by use of SPSS Version 11.5 (SPSS, Chicago, IL, USA). To describe continuous data the two-sample *t*-test (two-tailed), ANOVA (one-way) with *post hoc* LSD procedures and ANCOVA (one-way) were employed, while χ^2 statistics were used for categorical data. The degree of HI was categorized according to the EU Work group of Genetics of Hearing Impairment as mild (20 dB < MTH < 40 dB), moderate (40 dB ≤ MTH < 70 dB) and severe/profound (70 dB ≤ MTH) (Martini 1996). MTH ≤ 20 dB in the better ear was considered normal. The best regression model by use of the Enter method (i.e. simultaneous entry of all variables) for the communication strategies was found by studying the independent variables: age, gender, level of education, tinnitus, HA experience, duration of HI and degree of HI by MTH. Also, sense of humour was modelled as a potential explanatory variable on the communication strategies. *p*-values < 0.05 were considered statistically significant, except in the multiple regression analyses, where the criterion to keep variables as individual predictors in the model was 0.10. All multiple regression analyses were checked for interactions among predictor variables.

Results*Sense of Humour (SHQ-6)*

The average score on sense of humour for the whole sample was 17.0 (SD 2.6) (Table 2). We found a significant decrease across strata from the youngest to the oldest age group (*p* < 0.01). Men had a lower sense of humour after control for age (*p* < 0.05, *F* 4.216, *df* 1).

Communication Strategies (CSS)

Verbal communication strategies, such as “asking for a message to be repeated”, “asking the other to speak louder” and “telling others about one’s hearing difficulties”, had a mean overall score of 2.6 (SD 0.9) (Table 3). This score indicates that the specific communication strategies were used a

Table 2. Patient self-report: mean score and standard deviation (SD) of Sense of Humor Questionnaire (SHQ-6) by age and gender

Age	Total (<i>n</i> = 343)		Males (<i>n</i> = 188)		Females (<i>n</i> = 155)	
20–49	17.6	2.6	16.9	2.6	18.7	2.2
50–69	17.5	2.5	17.3	2.5	17.8	2.5
70–79	16.7	2.7	16.7	2.7	16.6	2.6
≥80	16.3	2.5	15.7	2.5	16.7	2.4
Total	17.0*	2.6	16.7	2.6	17.2	2.6

*ANOVA; *p* < 0.01 (*F* 4.756, *df* 3), *post hoc* analysis by LSD; decreased mean score between the age categories 50–69 and 70–79 years (*p* < 0.05). LSD: *t*-test for the comparison of pairs (in one-way ANOVA).

Table 3. Patient self report: mean score and standard deviation (SD) from Communication Strategies Scale (CSS) with Verbal and Non-verbal Strategies and Maladaptive behaviour for the total sample, males and females by level of hearing impairment (HI)

HI	Total ($n = 343$)						Males ($n = 188$)						Females ($n = 155$)					
	Verbal		Non-verbal		Maladaptive		Verbal		Non-verbal		Maladaptive		Verbal		Nonverbal		Mal-adaptive	
Normal	2.5	0.9	3.1	1.0	4.3	0.6	2.5	1.0	2.8	1.0	4.4	0.5	2.6	0.9	3.3	1.0	4.3	0.7
Mild	2.5	0.8	3.2	1.0	4.3	0.5	2.5	0.8	3.2	1.1	4.3	0.5	2.5	0.8	3.3	1.0	4.3	0.5
Moderate	2.7	0.8	3.4	1.0	4.0	0.6	2.6	0.7	3.3	1.0	4.1	0.6	2.8	0.9	3.6	1.0	4.0	0.7
Severe/profound	2.9	1.0	3.5	1.0	3.7	0.7	3.0	1.2	3.4	1.0	3.7	0.8	2.7	0.9	3.8	1.0	3.7	0.7
Total	2.6*	0.9	3.3	1.0	4.1 [†]	0.6	2.6	0.8	3.2	1.0	4.2 [‡]	0.6	2.7	0.9	3.5	1.0	4.1 [§]	0.7

*ANOVA; $p < 0.05$ (F 2.702, df 3), *post hoc* analysis by LSD; increased mean score between the hearing impairment (HI) categories mild and moderate ($p < 0.05$).

[†]ANOVA; $p < 0.001$ (F 11.397, df 3), *post hoc* analysis by LSD; decreased mean score by increased HI, except between categories normal and mild HI ($p < 0.05$).

[‡]ANOVA; $p < 0.001$ (F 6.980, df 3), *post hoc* analysis by LSD; decreased mean score by increased HI, except between categories normal and mild HI ($p < 0.05$).

[§]ANOVA; $p < 0.01$ (F 4.765, df 3), *post hoc* analysis by LSD; decreased mean score between the HI categories mild and moderate ($p < 0.05$).

LSD: *t*-test for the comparison of pairs (in one-way ANOVA).

little less than “half of the times.” The mean score increased from 2.5 to 2.9 from normal hearing to severe HI in the better ear ($p < 0.05$). The best regression model predicting verbal strategies included degree of HI, age, and HA experience. Even if this was highly significant ($p < 0.001$) it explained only 4.5% of the variance (Table 4). Severe HI, previous HA experience, and younger age related to frequent use of verbal strategies, whereas gender and sense of humour did not affect their use.

Non-verbal communication strategies had a mean score for the total sample of 3.3 (SD 1.0) (Table 3). These strategies, such as “strategically positioning oneself”, “paying close attention to the speaker’s face” and “catching actively the main points”, were used a little more than “half of the times” and increased non-significantly from 3.1 in subjects with a normal hearing in the better ear to 3.5 in those with a severe HI in the better ear ($p > 0.05$). Still, gender, HA experience, age, and duration of HI were retained in the best regression model for non-verbal strategies and explained 11.7% of the variance ($p < 0.001$) (Table 4). Female gender, previous HA experience, younger age, and long duration of HI were related to frequent use of these strategies (Table 4).

Table 4. Predictive variables of three communication strategies used by hearing impaired patients: unstandardized regression coefficients (β), standard error of β , and p -values (two-tailed) ($n = 343$)*

	β	Standard Error	p -value
<i>Verbal strategies</i> [†]			
Age	-0.009	0.003	0.010
Degree of HI [¶]	0.006	0.003	0.049
HA** experience	0.184	0.106	0.082
<i>Non-verbal strategies</i> [‡]			
Gender	0.288	0.107	0.007
Age	-0.014	0.004	<0.001
Experienced duration of HI [¶]	0.010	0.004	0.011
HA** experience	0.380	0.107	0.001
<i>Maladaptive behaviour</i> [§]			
Age	0.005	0.003	0.063
Sense of humour	0.026	0.013	0.047
Degree of HI [¶]	-0.010	0.002	<0.001
Experienced duration of HI [¶]	-0.007	0.002	0.006

*All multivariable regression analyses were performed by the Enter method and variables with $p < 0.10$ were kept in the models.

[†]Adjusted R^2 for model = 4.5%.

[‡]Adjusted R^2 for model = 11.7%.

[§]Adjusted R^2 for model = 13.2%.

[¶]HI = hearing impairment.

**HA = hearing aid.

Maladaptive behaviour was the coping strategy with the highest mean score, which implies that rather few patients made use of it (mean 4.1, SD 0.6) (Table 3). We found a difference in use of maladaptive behaviour, such as “guessing”, “pretending to hear” and “avoiding communication”, between different levels of HI for both genders ($p < 0.05$). Maladaptive behaviour was significantly predicted by degree and duration of HI, sense of humour, and age (Table 4). The explained variance of that model was 13.2% ($p < 0.001$). Subjects with limited and shorter duration of their HI and higher age and sense of humour, scored more favourably on maladaptive behaviour (i.e. they made less use of it) (Table 4). There was no difference in use of maladaptive behaviour between genders.

Overall, we found that sense of humour related only to use of maladaptive behaviour. ($p < 0.05$, Table 4).

Discussion

We assessed sense of humour and communication strategies among the hearing impaired outpatients who were assessed at a university hospital in Norway during 1 year. Higher sense of humour was related to female gender and younger age. The communication strategies most frequently used were the non-verbal strategies, while maladaptive behaviour were used least of all. Use of verbal strategies and maladaptive behaviour increased with increase in HI, while use of all strategies decreased with age. Gender associated only with the use of non-verbal communication strategies and was used more frequent among females. High sense of humour was related only to reduced use of maladaptive behaviour.

Coping Strategies

Our findings support other published research that, regardless of HI level and gender, affected subjects mostly cope through use of non-verbal strategies, whereas maladaptive behaviour is used the least (Demorest & Erdman 1987, Hallberg et al. 1992, Andersson et al. 1995, Barrenäs & Holgers 2000, Jonsson 2003). The rationale for using non-verbal strategies may be to maximize communication effectiveness, avert assistance from others, and minimize attention from others to the HI (Demorest & Erdman 1986). In our study, use of non-verbal strategies was explained by gender, rather than by degree of HI. Thus, women used non-verbal strategies more often than men, which is in accordance with other studies (Erdman & Demorest 1998, Garstecki & Erler 1999). These observed differences may be explained by better non-verbal communication skills among women (Mayo & Henley 1981). According to Erdman and Demorest (1998), more frequent use of non-verbal strategies among women is because they put emphasis on communication in social situations more strongly than men.

In a multiple regression model, we found that frequent use of non-verbal strategies was further explained by young age, and the significance of age was

also shown for verbal strategies and maladaptive behaviour. Erdman and Demorest (1998) who applied a similar approach, found a difference in use of communication strategies by age, too. In future studies, cognitive ability, comorbidity, and social characteristics should be considered as potentially additional factors when the effect of age is assessed. We found that longstanding HI and previous HA experience predicted more frequent use of non-verbal strategies. These variables were not included in the study by Erdman and Demorest (1998). Yet, our explained variance ($R^2 = 11.7\%$) was slightly less favourable than theirs ($R^2 = 17.1\%$).

Verbal strategies intend to compensate for communication problems associated with HI and differ from non-verbal ones by the active involvement of others. Subjects with HI may present specific requests or use general verbal communication strategies in order to better cope with stressful situations (Demorest & Erdman 1986). As in other reports, our patients used verbal strategies less frequently than non-verbal ones (Demorest & Erdman 1987, Hallberg et al. 1992, Andersson et al. 1995, Barrenäs & Holgers 2000, Jonsson 2003). While our regression model of verbal strategies explained only 4.5% of the variance, compared with 9.6% in the study by Erdman and Demorest (1998), it was still highly significant. They also found that more advanced HI was associated with frequent use of both non-verbal and verbal strategies, whereas we found that only verbal strategies were positively associated with advanced HI. Communication strategies have previously been studied in relation to the stigma attached to HI (Garstecki & Erler 1999), the “communication climate” (Hallberg & Jansson 1996), and one’s own acceptance of HI (Hallberg, Johnson & Axelsson 1993). Even if such relations were beyond the scope of the present paper, they may explain why we found that degree of HI had low or no impact on use of verbal and non-verbal coping strategies, respectively.

The best regression model for maladaptive behaviour included four independent variables and explained 13.2% of the variance (Table 4). Maladaptive behaviour interfere with effective communication (Demorest and Erdman 1987) and may alternatively be expressed as negative reactions to stressful events in communication. Demorest and Erdman (1986) stated that maladaptive behaviours are characterized by avoidance in one form or another. Thus, avoidance is a coping behaviour used in situations regarded as too demanding or threatening (Lazarus 2000). In the present context such coping implies “avoidance of the social scene” for subjects with HI (Hallberg & Carlsson 1991) or “withdrawal from social interaction” (Danermark 1998). We found that individuals with mild HI used maladaptive behaviours less than those who had a more severe HI, as did Erdman and Demorest (1998). Moreover, we found that longstanding HI, older age, and less sense of humour related to more use of maladaptive behaviour. If maladaptive behaviour is a sign of withdrawal from social interaction, this study may indicate that degree of HI, duration of HI, age and sense of humour are related to such withdrawal. High sense of humour may therefore reduce social withdrawal, whereas increasing degree and duration of HI, as well as age, may increase the withdrawal.

Limitation and Strengths of Study

The clinical setting in which the self-report information was collected, may have influenced the responses about communication strategies. In order to reduce this potential bias and before handing over the questionnaires, care was taken to explain that answers would not influence the consultation outcome, nor any treatment offered. Patients were further instructed to answer the questions according to how often situations or behaviours described in each item normally occurred in their daily life.

It is a strength that our study embraced all adult subjects during 1 whole year regardless of gender, age, aetiology of HI, tinnitus, severity and duration of HI, and previous HA experience. Because we recruited an unselected hearing-impaired population, we believe that our findings are representative for this category of patients in our catchment and similar areas. We explored the use of communication strategies in relation to several audiological variables as well as other participants characteristics. While doing so, we have been able to identify only one other study which employed the same approach and addressed a study population of a similar size (Erdman & Demorest 1998). Yet, they analysed only one audiological variable, i.e. degree of HI. No other study of HI was identified which examined the impact of sense of humour on use of communication strategies.

We have used an internationally accepted instrument for the assessment of sense of humour (SHQ-6) which has been developed and evaluated in Norway (Svebak 1996, Cann et al. 1999). Even if Svebak's study (1996) made use of a younger population than we did, the overall internal consistency reliability was reasonably high (Cronbach's alpha 0.85).

Conclusion

Use of maladaptive behaviour and verbal strategies increased with increasing HI, whereas higher age was associated with decrease in use of all communication strategies. No gender differences in the use of maladaptive behaviour and verbal strategies was found, but women used non-verbal communication strategies more often to compensate for their HI. Higher sense of humour was related to younger age, female gender and less use of maladaptive behaviour.

In forthcoming papers we will report how coping strategies and resources relate to the life consequences of HI in terms of activity limitation and/or participation restriction. As it was not part of these analyses, the applicability of sense of humour in aural rehabilitation needs to be documented in further studies. Still, these preliminary findings indicate that sense of humour may play a role in the prevention of maladaptive behaviour.

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