Boundary Questionnaire Results and Dream Recall Among Persons Going Through Retirement

Arthur T. Funkhouser[1], Othmar Würmle[1], Karin Carnes[2], Peter Locher[2], Fabian Ramseyer[2] & Marcel Bahro[3]

[1]University Hospital of Clinical Psychiatry Berne, Switzerland
[2]University of Bern, Bern, Switzerland
[3]Wyeth-APH (Switzerland) AG, Switzerland

Summary. The brief version of the Hartmann Boundary Questionnaire (BQ18) was administered twice, with nine months in between, to 102 Swiss subjects over 58 years of age going through retirement and participating in a study on the effects of dream-telling on five variables: well-being, sleep quality, sleep duration, dream recall and dream tone. The retest reliability for the BQ18 in this investigation was moderate (correlation coefficient r = 0.597, N = 102). The significant difference obtained for gender in the first test disappeared in the second one. For both test batteries there were some significant relationships with the BQ18 results and other test results but none with average dream recall. Further research will be needed to clarify the reasons for this.

Keywords: Boundary questionnaire; Retest reliability; Gender; Dream recall

1. Introduction

The data for this investigation stem from a study on the effect of dream-telling among persons going through retirement. Here the results obtained using a brief form of the Boundary Questionnaire (BQ18 [18 items]) (Kunzendorf, Hartmann, Cohen, & Cutler, 1997; Hartmann, Harrison, & Zborowski, 2001) are presented. The way the test is constructed, those with thicker intra-psychic boundaries have lower total scores while testing those with thinner boundaries yield higher scores. Because the participants in this investigation were subjected to several scales in three batteries of tests (see below), it was decided to employ the test (in German) in its abbreviated form.

Hartmann (1991, p. 128) said he believes that "in general stressful conditions tend to produce thickening of boundaries in a number of senses" and provides defensiveness as one example. This led to the hypothesis for this study that with retirement as a stress factor, some thickening of boundaries would be observed. A second hypothesis was that in keeping with the results of previous investigations (cf. Funkhouser, Cornu, Hirsbrunner, & Bahro, 2001) no gender dependence on boundaries would be found. A third hypothesis is that dream recall would be positively correlated with boundary thinness, in keeping with results published previously using the full Boundary Questionnaire (Cowen & Levin, 1995; Hartmann, 1989; Hartmann, Elkin, & Garg, 1991; Schredl, Kleinfechner, & Gell, 1996).

2. Methods

2.1. Participants

With the assistance of the personnel offices of four Swiss cantons: Aarau, Bern, Solothurn and Zurich 108 mentally healthy volunteers facing retirement were recruited for this investigation. None of them had a special interest in dreams or dreaming.

Coresponding address:
Dr. Arthur T. Funkhouser, Frikartweg 2, CH-3006 Bern, Switzerland. Email: atf@alum.mit.edu

Submitted for publication: July 2008
Accepted for publication: September 2008

2.2. Procedure

The participants were subjected to a battery of tests and questionnaires 3 months before their date of retirement, again at retirement and finally once more at six months following retirement. Those with mental illness or taking psychoactive medication were excluded. Demographic data was collected and physical examinations were made. The DIA-X SSQ structured diagnostic interview (DIAX, Wittchen et al., 1990) was used in the initial test battery to screen for mental illness. The instruments used for all three test batteries included German versions of the Geriatric Depression Scale (GDS, Yesavage et al, 1983), Brief Symptom Inventory (BSI, Derogatis, 1993; Geisheim et al., 2002), PANAS Positive and Negative Symptom Scale (PANAS, Watson, Clark & Tellegen, 1988; Egloff & Krohne, 2002), and the WHO Quality of Life scale (WHOQOL, Sartorius, 1993). In the second test battery a Work Satisfaction Inventory was employed and in the final test battery a Resources Self-Evaluation scale was used (both of these scales are being developed and evaluated at the Psychology Department of the University of Bern). Due to the lengthy testing it was decided to utilize the BQ18 (German version) rather than the full BQ and this was administered in the first and third testing sessions. Over the course of the investigation, 6 subjects decided to drop out.

The remaining 102 persons consisted of 82 men (age range: 58.4-65.8 years, mean age: 62.7 ± 1.9 years) and 20 women (age range: 57.0-64.9 years, mean age: 62.2 ± 1.6 years). In a design like that employed in a previous study (Funkhouser, Cornu et al., 2001; Funkhouser, Würmle et al., 2001) these were divided at random into a trial group and two control groups. The trial group members (25 men and 9 women, age range: 57.0-65.8 years, mean age: 62.7 ± 1.8 years) were telephoned weekly and asked about their life satisfaction, sleep quality (quiet, disturbed), sleep depth and length, about any problems with going to sleep and if sleep was interrupted. They were also asked if they had dreamt. If the answer was yes, they were then asked to estimate the number of dreams recalled during the week and if they would like to tell a dream. Those in the

Table 1. Test-retest correlations of the BQ18 scores according to genders for the two control groups and the trial group, and the totals, respectively.

	Control group 1	Control group 2	Trial group	Totals
Women	0.88 (n = 5)	0.50 (n = 6)	0.47 (n = 9)	0.58 (n = 20)
Men	0.75 (n = 25)	0.63 (n = 32)	0.33 (n = 25)	0.61 (n = 82)
Totals	0.75 (n = 30)	0.63 (n = 38)	0.34 (n = 34)	0.60 (N = 102)

first control group (5 women and 25 men, age range: 59.6-64.9 years, mean age: 62.4 ± 1.8 years) were also contacted weekly for approximately the same length of time and asked the same questions having to do with life satisfaction and sleep, but did not provide dream information. Those in the second control group (6 women and 32 men, age range: 58.4-65.8 years, mean age: 62.6 ± 1.9 years) were not contacted between the test battery sessions.

The testing and telephoning were performed by three students from the University of Bern psychology department. Each participant had the same tester and telephone contact person throughout the investigation. While BQ18, age and gender information was ascertained for all 102 study participants, figures for dream recall (i.e., the numbers of dreams participants said they had retained each week) for the 36-week trial period are available only for those in the trial group.

3. Results

The retest reliability for the BQ18, calculated as the correlation between the first and second test score results (nine months between tests), was only moderately high. The overall value (all participants, N = 102) is about 0.6, but regarding the various subgroups (split by sex and study condition), the range is fairly wide, from 0.33 to 0.88 (table 1). An analysis of the 3 correlation coefficients for the 3 subgroups yielded a V-value of 5.79 (p = .055), however, so the hypothesis that the differences are caused by chance cannot be rejected. The reliability of the BQ18 scale was assessed with Cronbach's alpha. The values of .652 for the first testing and .559 for the second testing are quite low, indicating only a moderate internal consistency. Schredl & Engelhardt (2001) employed the BQ18 and found a similar internal consistency for mentally healthy individuals, namely .572 (N = 152).

For the BQ18, test scores above 42 correspond to very thin boundaries while those below 30 signify thicker than normal boundaries (Kunzendorf et al., 1997; Hartmann et al., 2001). The mean scores in our sample (overall and subgroups) are all below 30 indicating that the majority of the subjects have thicker than normal boundaries. Table 2 shows the means and standard deviations of the BQ18 scores for men and women and for the three study groups separately.

A repeated measure ANOVA with the factors group, sex and time showed that the time factor is highly significant (p = .001). The sex and group factors, however, were not significant and there were no significant interactions (Table 3). The mean test and re-test BQ18 scores for all 102 participants amounted to 27.3 ± 8.0 and 25.5 ± 7.1, respectively and this change over the nine-month period is in the direction of increasing thickness. A repeated measure t-test confirmed the significant time effect from the ANOVA, $t(101) = 2.73$, p = .007. The BQ18 scores were lower in the second test than in the first one for all subgroups, indicating a general thickening of boundaries in the 9 month study time: 59.8% of all the participants had lower values in the second test (thicker), 35.3% had higher values (thinner) and 4.9% had no change.

Concerning gender the women had generally higher scores, indicating thinner boundaries among the women than among the male subjects. The above-mentioned general thickening over the nine-month period was more pronounced for the women than for the men (BQ18 scores decreasing from 30.8 ± 5.3 to 26.2 ± 6.2 and from 26.5 ± 8.4 to 25.3 ± 7.4, respectively). The difference between the scores for the men and women at the time of the first test was significant, $t(100) = 2.17$,

Table 2. BQ18 score means and standard deviations according to gender for the two control groups and the study group, and the totals, respectively.

	Trial group	Control Group 1	Control Group 2	All participants
Women	(n = 9)	(n = 5)	(n = 6)	(n = 20)
First test	30.2 ± 5.7	31.4 ± 6.3	31.0 ± 4.7	30.8 ± 5.3
Final test	25.2 ± 4.5	25.2 ± 7.7	28.7 ± 7.4	26.2 ± 6.2
Men	(n = 25)	(n = 25)	(n = 32)	(n = 82)
First test	30.0 ± 6.4	23.4 ± 9.3	26.2 ± 8.2	26.5 ± 8.4
Final test	27.8 ± 8.2	22.8 ± 6.6	25.2 ± 6.8	25.3 ± 7.4
Men & women	(n = 34)	(n = 30)	(n = 38)	(N = 102)
First test	30.0 ± 6.2	24.7 ± 9.3	27.0 ± 7.9	27.3 ± 8.0
Final test	27.1 ± 7.4	23.2 ± 6.7	25.8 ± 6.9	25.5 ± 7.1

Table 3. ANOVA multi-factor analysis of the BQ18 test and retest results (N = 102).

Factor	*F* value	*df*	*p* value	Lambda	Power
Group	0.86	2	.428	1.71	0.19
Sex	2.65	1	.107	2.65	0.35
Time	10.77	1	.001	10.77	0.92
Group * Sex	1.54	2	.221	3.07	0.31
Time * Group	0.51	2	.603	1.02	0.13
Time * Sex	3.52	1	.064	3.52	0.44
Time * Group * Sex	0.46	2	.636	0.91	0.12

p = .0327, but this was no longer true for the second test. According the nearly significant interaction of sex/time in the ANOVA (Table 3) the change in the scores between the first and second test was significant for the women, $t(19) = 3.76$, p = .013, but not for the men.

As in the previous investigation (Funkhouser, Cornu et al., 2001), the mean dream recall results for the 34 persons in the trial group were not strongly related to their BQ18 scores (r = -0.27 for the first test, r = 0.04 for the final test).

To check the coherence of the BQ18 scores with other variables concerning mental health and life satisfaction, non-parametric Spearman rho correlations were calculated for the various test variables in relation to the BQ18 values for the first and third test batteries (when the BQ18 was used for the second time) (Table 4). The rho values are generally quite moderate, but in the second test they tend to be higher than in the first one (a maximum value of 0.36 for the first test battery and 0.41 for the third one). Positive rho values for the Geriatric Depression Scale and the Brief Symptom Inventory indicate that increasing symptom strength is correlated with increasing thinness of intra-psychic boundaries while the negative rho values of the PANAS and WHOQOL scales indicate that increasing affects and life satisfaction are negatively correlated with increasing boundary thinness.

4. Discussion

The test-retest correlation coefficient obtained for all 102 participants is 0.60 for the BQ18. This is lower than the test-retest correlation coefficient of 0.77 published by Hartmann et al. (2001) in an investigation with 208 college-aged students. It is also lower than the 0.87 obtained using the full version of the BQ with elderly participants and six months between tests (Funkhouser, Cornu et al., 2001), indicating that the BQ18 is less reliable than the full version as a trait-measuring instrument. Thus, it could be that the BQ18 should be seen more properly as measuring a state rather than a trait. The highly significant effect of time in the ANOVA results presented in table 3 indicate that the BQ18, at least in our sample, reflects real changes concerning the intra-psychic boundaries during the nine month period.

The relatively low Crombach alpha values of .652 for the first testing and .559 for the second testing can be compared with an alpha value of .925 for the full 138-item questionnaire (Hartmann et al., 2001). Kunzendorf et al. (1997) found a correlation of r = 0.87 between the score obtained with the 18 items of the short form and the SumBound score found for the same subjects with the full 138-item questionnaire. Schredl & Engelhardt (2001) obtained a similar correlation that amounted to .893.

Comparing these results obtained with elderly subjects with the findings for young adults (Kunzendorf et al., 1997; Hartmann et al., 2001), however, the mean score for the subjects tested here was considerably lower (indicating thicker boundaries) than those for much younger subjects tested with the BQ18 in the US. In a previous investigation (Funkhouser, Cornu et al., 2001) the results obtained using the BQ (full version) with elderly Swiss subjects were also lower than those found with younger American subjects. One could surmise that this might be due to cultural differences rather than age. Strauch and Meier (1999), however, found that for a group of 123 Swiss persons (84 women and 39 men with a mean age of 29) the average SumBound BQ score came to 302 ± 37.5 which is higher (i.e., in the direction of thinner boundaries) than the mean of 273 ± 52 obtained by Hartmann (1991). It would seem, then, that the lower values obtained for elderly subjects in these two Swiss studies support the results of Hartmann (1991) and McCrae (1994) that boundaries tend to "thicken" with age. Changes in mentality between the generations could also cause such differences: generally speaking, younger Swiss seem to be more open to new experiences and ideas than their parents and grandparents.

Regarding gender, it was hypothesized that men would tend to have thicker boundary scores than women, in line with what has been determined previously (McCrae, 1994; Cowan & Levin, 1995, Funkhouser, Cornu et al., 2001) and such a difference was significantly present in the results obtained with the first testing. This difference was smaller in the second testing, however, so the ANOVA results of table 3 do not show sex as being a significant main factor. This suggests that there are substantial differences among the genders (men have thicker boundaries than women) but in our specific sample the differences diminished during the time of retirement.

It is quite surprising that the BQ18 scores of both sexes decreased (i.e., in the direction of increasing boundary thickness) between the two test sessions. This effect is more pronounced in women than in men. This is confirmed in the "nearly significant" sex*time interaction (p = .064). In both sexes boundary thickening occurred during the time of retirement but because before retirement the male boundaries were already thicker than those of the women, the thickening is more pronounced among the latter. It could be that the thickening is not linear at lower scores (= bottom effect) which would cause the change in the male scores to be less than that found for the feminine ones. The convergence of the values at the lower level in the second test explains the non-significant gender difference in the second testing.

The decreased scores could have been an effect of retirement since at the time of the second test session, the subjects had now been retired six months and were thus in a state of transition between full employment and retirement. It might also, however, be due to the testing itself in that the subjects became more "guarded" due to all the questioning they had endured. In any case, it would seem that women were more

Table 4. Non-parametric Spearman rho values and associated probabilities for BQ18 scores (first and third test batteries) and those of the various scales that were utilized (*N* = 102).

Scale	Score or domain	First test battery		Third test battery	
		rho	*p* > |rho|	*rho*	*p* > |rho|
GDS	Score	0.126	0.2086	0.182	0.0678
BSI	Positive symptom total	0.325	0.0009**	0.386	< 0.0001***
	Somatization	-0.003	0.9796	0.151	0.1288
	Obsessive-compulsive	0.213	0.0320*	0.311	0.0015**
	Interpersonal sensitivity	0.176	0.0763	0.367	0.0002***
	Depression	0.161	0.1070	0.264	0.0073**
	Anxiety	0.169	0.0898	0.222	0.0249*
	Anger-hostility	0.223	0.0245*	0.348	0.0003**
	Phobic anxiety	0.089	0.3739	0.125	0.2104
	Paranoid ideation	-0.006	0.9508	0.137	0.1690
	Psychoticism	0.081	0.4207	0.227	0.0215*
PANAS	Score	-0.284	0.0038**	-0.403	< 0.0001***
	Positive	-0.111	0.2677	-0.280	0.0044**
	Negative	-0.292	0.0029**	-0.378	< 0.0001***
WHOQOL	Physical	-0.270	0.0060**	-0.176	0.0775
	Psychological	-0.360	0.0002**	-0.411	< 0.0001***
	Level of independence	-0.295	0.0026**	-0.310	0.0016**
	Social relationships	-0.248	0.0120*	-0.184	0.0642
	Environment	-0.298	0.0024**	-0.256	0.0094**
	Spirituality	-0.211	0.0331*	-0.285	0.0039**

Note. * < .05; ** < .01; *** < .001

affected than the men since the change in the average value of their scores is nearly four times as large. On the other hand, the number of female retirees was much smaller than that of the men in our subject population and this result may be due to this fact in some way.

With regard to dream retention, a positive correlation between BQ18 scores and the number of dreams recalled, as found in previous investigations (Cowen & Levin, 1995; Hartmann, 1989; Hartmann et al., 1991, 1998, 2001; Schredl et al., 1996), was expected. The BQ18 score in our population, though, failed to predict dream retention. While this is counter to the results obtained in the investigations just mentioned, it does agree with the results obtained in a previous study with Swiss elderly subjects (Funkhouser, Cornu et al., 2001) as well as those obtained by researchers at the University of Zurich, both for laboratory dreams and for dreams recorded each morning on tape at home (Strauch & Meier, 1999). Examination of the BQ (and thereby the BQ18) questions failed to reveal a cultural bias that might affect the resulting scores and further research into this enigma is indicated.

The moderate correlations between the BQ18 scores and those for most of the other test variables shown in Table 4 indicate that the Boundary Questionnaire tends to test other characteristics than those measured by the other scales. A similar conclusion was obtained by Hartmann (1991) who had 300 subjects fill out both the BQ and the Minnesota Multiphasic Inventory (MMPI) and obtained correlations which parallel the ones presented here. In addition, Schredl (2004) has obtained a notable correlation between the full BQ SumBound score with neuroticism (r = .334, N = 444).

That many correlations were non-negligible, however, may point to a connection between boundary thinness and mental distress or illness. Celenza (1986) found that persons with a diagnosis of borderline personality disorder tended to have thin boundaries. Hartmann (1991) states that persons who have schizotypal or paranoid personality disorders tend to have thin boundaries while those with obsessive-compulsive personality disorders tend to have thicker boundaries. These results, however, were obtained with relatively few subjects who had been diagnosed as suffering from mental disorders. The 102 subjects studied here scored in the low mental disturbance range (Carnes, private communication), but the results presented here indicate that further investigation into such connections might well be worthwhile.

Acknowledgements

This work was supported by a grant (No. 3200-059359.99, "The effects of dream-telling on persons going through retirement ") from the Swiss National Science Foundation. The authors wish to thank Michael Schredl, Mannheim, for many helpful suggestions and also Ruth Reinsel (NYC) and Hans-Peter Hirsbrunner for help with the statistical evaluations. Various aspects of the data presented in this paper were presented at the 19th annual meeting of the Association for the Study of Dreams, June 15 to 19, 2002, at Tufts University in Medford, MA.

References

Celenza, A. (1986). Empathy, ego boundaries and deficits. (Doctoral dissertation, Boston University), 47/05, 2152B, Dissertation Abstracts International.

Cowan D., & Levin R. (1995). The use of the Hartmann boundary questionnaire with an adolescent population. Dreaming, 5,105-114.

Derogatis, L. (1993). Brief Symptom Inventory: Administration, Scoring, and Procedures Manual. Minneapolis, MN: National Computer Systems.

Domhoff, G. W. (1996). Finding Meaning in Dreams: A Quantitative Approach. New York: Plenum Press.

Egloff, B., & Krohne, H. W. (2002). PANAS. Positive and Negative Affect Schedule. In E. Brähler, J. Schumacher, & B. Strauß (Eds.), Diagnostische Verfahren in der Psychotherapie (pp. 264-266). Göttingen: Hogrefe.

Funkhouser, A., Cornu, C. M., Hirsbrunner, H.-P., & Bahro, M. (2000). A study of dream-telling among mentally healthy elderly: No adverse effects on life or sleep quality. International Journal of Geriatric Psychiatry, 15, 917-930.

Funkhouser, A., Cornu, C. M., Hirsbrunner, H.-P., & Bahro, M. (2001). Boundary questionnaire results in the mentally healthy elderly. Dreaming, 11, 83-88.

Funkhouser, A., Würmle, O., Cornu, C. M., & Bahro, M. (2001). Dream life and intrapsychic boundaries in the elderly. Social Behavior and Personality, 29, 557-568.

Geisheim, C., Hahlweg, K., Fiegenbaum, W., Frank, M., Schröder, B., & von Witzleben, I. (2002). Das Brief Symptom Inventory (BSI) als Instrument zur Qualitätssicherung in der Psychotherapie. Diagnostica, 48, 28-36.

Hall, C., & Van de Castle, R. (1966) The Content Analysis of Dreams. New York: Appleton Century Drafts.

Hartmann, E. (1989). Boundaries of dreams, boundaries of dreamers: Thin and thick boundaries as a new personality measure. Psychiatric Journal of the University of Ottawa, 14, 557-560.

Hartmann, E. (1991). Boundaries in the Mind: A New Psychology of Personality. New York City: BasicBooks Inc.

Hartmann, E., Elkin, R., & Garg, M. (1991) Personality and dreaming: the dreams of people with very thick or very thin boundaries. Dreaming, 1, 311-324.

Hartmann, E., Rosen, R., & Rand, W. (1998) Personality and dreaming: Boundary structure and dreams. Dreaming, 8, 31-40.

Harmann, E., Kunzendorf, R., Rosen, R., & Grace, N. G. (2001). Contextualizing Images in dreams and daydreams. Dreaming, 11, 97-104.

Hartmann, E., Harrison, R., & Zborowski, M. (2001). Boundaries in the Mind: Past Research and future directions. North American Journal of Psycholog y, 3, 347-368.

Kunzendorf, R. G., Hartmann, E., Cohen, R., & Cutler, J. (1997). Bizarreness of the dreams and daydreams reported by individuals with thin and thick boundaries. Dreaming, 7, 265-271.

McCrea, R. R. (1994). Openness to experience: Expanding the boundaries of Factor V. European Journal of Personality, 8, 251-72.

Sartorius, N. (1993). WHO Method for Assessment of Health-related Quality of Life. In S. R. Walker, & R. M. Rosser (Eds.), Quality of Life Assessment: Key Issues in the 1990s. Dordrecht, Netherlands: Kluwer Academic Publishers.

Schredl M., Kleinfechner, P., & Gell T. (1996) Dreaming and personality: Thick vs. thin boundaries. Dreaming, 6, 219-23.

Schredl, M., & Engelhardt, H. (2001). Dreaming and psychopathology: dream recall and dream content of psychiatric inpatients. Sleep and Hypnosis, 3, 44-54.

Schredl, M. (2004). Traumerinnerung: Modelle und empirische Untersuchungen. Marburg: Tectum.

Strauch, I., & Meier, B. (1999). 20 Jahre Traumforschung. Bericht Nr. 46 aus der Abteilung Klinische Psychologie (pp. 66-73). Report available from the Psychologisches Institut der Universität Zürich, Schmelzbergstrasse 40, 8044 Zürich, Switzerland.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality & Social Psychology, 54, 1063-1070.

Wittchen, H. U., Zaudig. M., Schramm, E., Spengler, P. Mombour, W., Klug, J., & Horn, R. (1990). Strukturiertes Klinisches Interview für DSM-III-R [Structured Clinical Interview for the DSM-III-R]. Weinheim: Beltz Test GmbH.

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M. B., & Leirer, V. O. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. Journal of Psychiatric Research, 17, 37-49.