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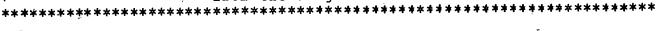
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ABSTRACT

A death anxiety scale developed in 1973 by Nehrke was administered to 655 adult subjects. Their responses were differentiated according to age, sex, race, and level of education. Data were also analyzed using the varimax rotated factor matrix procedure to determine significant factors that the scale was, in fact, measuring. Loadings on four distinct factors accounted for 92.7% of the variance measured by the scale: fear of isolation and immobility, fear of pain, fear of the future, and fear of physical decomposition. Analyses variance revealed that older respondents had significantly less death anxiety as measured by this scale than did younger subjects. Males indicated significantly less death anxiety than did females in this sample. No differences in death anxiety were found by race or educational level. A number of recommendations are made for further modification and revision of the scale.

(Author/MFD)



A Factor Analytic Study of a Scale
Designed to Measure Death Anxiety

A paper presented to the Section on Behavioral and Social Sciences

of the Gerontological Society at the 30th Annual Scientific Meeting,

San Francisco, November 21, 1977

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THIS DOC JMENT HAS BEEN REPRO-DUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGIN-ATING IT POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRE-SENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY This is the report of the first two parts of a three-phase research project on attitudes toward death and dying. First, data on the application of a scale designed to measure death anxiety is presented; next is a factor analysis of the scale itself. The third part of the study, which is yet to be completed, is the partial validation of a revised version of the scale.

A number of researchers have examined correlates of the fear of death. Middleton (1936) surveyed college students as to their death thoughts; his data were interpreted by Lester (1967) to indicate that females had greater death anxiety than males. Diggory and Rothman (1961) found that females had a greater fear of the dissolution of the body. Temple, Ruff, and Franks (1971) found greater death anxiety among females but no differences in fear of death by subjects' age. Nehrke (1973), using a scale for the measurement of the fear of death that combined instruments developed by Templer (1970) and by Boyar (1964), found significantly greater death anxiety among females in a group of 296 college students. Bengston, Cuellar, and Ragan (1977), as a part of a larger study, found death anxiety to be higher among females and lower among the aged. An earlier study by the senior author of this paper (Thorson, 1977) found higher death anxiety on the part of females and persons high in the personality trait of succorance, and lower death anxiety on the part of males and persons high in the trait of aggression.

Data on a large sample was sought to clarify these earlier findings. In particular, the factors of age and sex were to be examined,



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as well as race and level of education, to determine the relative importance of these variables. It was hypothesized that, because of the process of rationalization undergone during the life review (Butler, 1963), older subjects would have less death anxiety.

# Methodology

A convenience sample of 659 adults completed a death anxiety scale developed by Nehrke (1973) from two earlier scales originally developed by Templer (1970) and Boyar (1964). Demographic characteristics of the respondents are found in Table 1. The scale consists of 34 true-false statements (identified here as the NTB for Nehrke-Templer-Boyar) and one Likert item: "My overall feeling toward death can be characterized as," on which the respondent can check one of seven choices on a continuum from "fearful" to "look forward to." An earlier study (Thorson, 1977) had found a significant correlation (r=-.61) between the NTB and the Likert item. Possible scores on the NTB range from 0 to 34, with higher scores representing more death anxiety.

### Results

Significant (p<.001) correlations were found between age and the NTB items ( $\underline{r}$ =-.15) and the Likert item ( $\underline{r}$ =.16), both indicating less death anxiety on the part of older subjects. A correlation significant at the .01 level was found between the NTB items and the variable of sex ( $\underline{r}$ =.11), indicating higher death anxiety on the part of females. Comparisons on the variables of race and level of education revealed no significant relationships. One-way analyses of variance for the variables of age and sex confirmed these findings (see Tables 2, 3,



and 4). A linear relationship between death anxiety and age was found on both the NTB scale and the Likert item, with anxiety decreasing for each of the four age categories as age increased (Tables 2 and 3). A Duncan multiple range procedure was used to test for the significance of differences between the mean scores of the four age groups, and a significant difference (p<.01) was found between the respondents 35 years of age and younger and those aged 36 and above on both comparisons.

In order to gain a better perspective on the relative importance of the variables, two-way analyses of variance were done (see Tables 5, 6, 7, and 8) comparing age by sex on both the NTB and Likert items, and sex by race and sex by education on the NTB. As indicated by the data in Tables 5 and 6, both age and sex have a significant effect: the results found were not because of a statistical artifact, such as more of the older subjects being male. Again (Tables 7 and 8), no significant differences in attitude were found by subjects' race or level of education.

One might conclude from these data that Diggory and Rothman's (1961) contention that females have a greater fear of bodily dissolution is correct, in that they indicate a significantly higher level of death anxiety than males in this and other studies (Bengston, Cuellar, & Ragan, 1977; Thorson, 1977; Nehrke, 1973; and Templer, Ruff, & Franks, 1971). Further, data here lend support to the hypothesis that persons who have gone through the life review have rationalized their fears of death and thus display less death anxiety than younger persons.



# Phase II

Not being content to leave well enough alone, we sought to answer a question that might more properly have been asked before Phase I of this study: does the scale chosen for this project really measure death anxiety? Having a sufficient number of cases available, a factor analysis was done on the 659 responses to the 34 NTB items. The resultant varimax rotated factor matrix is presented in Table 9. Items loaded on eight different factors, although factors number seven and eight did not appear upon analysis to be central to the purpose of the scale. Also, two pairings seemed to emerge, it might be argued that factors three and four, and factors five and six, represent mirror images of the same concepts, and they are combined here for purposes of discussion. Table 10 give Eigen values and the percentages of the variance that each particular factor contributes. An intercorrelation matrix, comparing the relationship of each item with all of the others, is presented in Table 11.

## Discussion

For purposes of analysis and discussion, then, we will discard Factors seven and eight, which contribute only a total of 7.7% of the variance; also, we will combine factor three with four and factor five with six, since many of the same items loaded on these pairs, respectively, and there seems to be some logic from the content of the items for considering them together.

Four distinct concepts emerge from this manipulation of the factors: Factor 1 - Fear of isolation, inactivity, and immobility (items 2, 4, 6, 8, 13, 14, and 17) contributes 51.7% of the variance.



Factor 2 - Fear of pain (items 7, 10, 23, 25, 28, and 32) contributes 11.8% of the variance.

Factor 3 (original factors 3 & 4) - Fear of the concept and finality of death (items 6, 11, 16, 19, 20, 21, 29, and 30) contributes 16.5% of the variance.

Factor 4 (original factors 5 & 6) - Fear of burial and decomposition (items 5, 8, 12, 15, 18, and 33) contributes 12.7% of the variance.

Implications

Thus, the four concepts identified account for 92.7% of the variance associated with this scale. The elements of the scale, however, seem inadequate to the authors in several respects.

The logic of having a multi-dimensional scale to assess death anxiety would suggest a more equal balance among the factors: fear of isolation and immobility clearly does not make up over 50% of our fear of death as a society. Further, the fear of the pain associated with death most likely makes up more than 12% of our death anxiety. Recommendations

A revision of the NTB scale, therefore, might:

- 1. Reduce the number of items that load significantly on Factor 1.

  Item 6, beside the fact that it is a double-parrelled statement and ought for that reason to be discarded, loads significantly on two different factors and thus does not meet the test of discreteness. Item 8 also loads on several factors.
- 2. Eliminate the extraneous items (#3, 9, 27, and 31) that load significantly only on factors seven and eight, which seem to have little true relationship with the central purpose of the scale.



- 3. Increase the number of items that load on Factor 2 by constructing two or three additional statements.
- 4. Eliminate or rephrase the items having a large number of significant but low-level correlations with other items as not being discrete (items 2, 5, 6, and 8).

Hopefully, Phase III of this study will accomplish these changes and provide partial validation data on a revised scale.



Table 1. Characteristics of Respondents

Number	Characteristic	Percentage of Group		Number	Characteristic:	Percentage of Group				
	Age				Sex					
115 302 203 39 659	Under age 22 22 to 35 36 to 55 Over age 55	17.5% 45.8% 30.8% 5.9%		172 485 <u>2</u> 659	Males Females Not indicated	26% 74%				
	Race				Level of Educa	tion				
449 50 22 <u>138</u> 659	Whites Blacks Orientals Not indicated	68.1% 7.6% 3.3%	<b>~</b> .	114 353 117 45 659	less 22% ge 54% chool 18%					
	Occupation									
167 59 177 62 49 112 <u>33</u> 659	Nurse Social Worker Home Economist Police Student Other (including housewife) Not indicated	25.3% 8.9% 26.8% 8.9% 7.4%								



TABLE 2.

ONE WAY ANALYSIS OF VARIANCE - DEATH ANXIETY BY AGE (NTB)

	- *	4÷ /		-		1
Source	Degrees of Freedom	· Sı	um of ua <b>res</b>	Mean Squares	F <sub>Ratio</sub>	F <sub>Probability</sub>
Between Groups	3:		777.94	259.31	6.178	0.001
Within Groups <u>651</u>		27,	325.88	41.97		ā
Total	654	28,	103.82	-		- -
Group	-	<u>N</u>	<u>Mean</u> *	Standard Deviation		
Under 22 years o	f age	114	15.08	6.39		
From 22 to 35 ye	ars of age	301	14.98	6.52		
From 36 to 55 ye	ars of age	201	13.08	6.59		-
Over 55 years of age		_39	11.64	5.73		
Total		655	14.22	6.56		•
•						

\*Higher mean score indicated more death anxiety



Source	Degrees of Freedom		m of ares	Mean Squares	FRatio	F <sub>Probability</sub>
Between Groups	3	2	7.63	15.88	6.40 -	0.001
Within Groups	<u>639</u>	1,58	35.05	2.48		` ;
Total	642	1,63	32.68	-		
				a		• -
Group		<u>N</u>	<u>Mean</u> *	Standard <u>Deviation</u>		
Under 22 years o	f age	113	3.08	1.49		
From 22 to 35 ye	ars of age	293	3.22	1.44		-
From 360/to 55 ye	ars of age	198	3.66	1.75	-	
Over 55 years of	age	<u>39</u>	<u>3.97</u>	<u>1.77</u>		· -
Total		643	3.37	1.59	-	•

<sup>\*</sup>Lower mean score indicates more death anxiety

•					- -					
Within Groups	<u>652</u>	<u>27,</u>	596.63	42.33						
Total	653	27,	954.32	ī						
<u>Group</u>		<u>N</u>	<u>Me an</u> *	Standard Deviation						
Males		171	12.99	6.29						
Females		483	14.68	6.58	•					
Total		654	14.24	6.54						

Mean

Squares

357.69

F<sub>Ratio</sub>

8.45

F<sub>Probability</sub>

-0.004

Sum of

Squares

357.69

Degrees of

\*Higher mean score indicates more death anxiety

Freedom

1



Source

Between Groups

Sex	531.61 N = 659	1	531.61		<u> </u>
		TALLE OF VARIANCE - AGE B	6. Y SEX (LIKERT DI	EATH ANXIETY IT	EM) Significance
Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	<b>F</b>	of F
Main Effects	51.84	4	12.96	5.23	0.001
	50.56	3	16.85	6.80	0~001
Age	4.24	1	4.24	1.71	0.188
Age Sex					

1.3

Mean

Square

Degrees of Freedom

Sum of

Squares

Significance of F

Source of Variation

Source of	Sum of	Degrees of	Mean		Significa
Variation	Squares	Freedom	Square	<u>F.</u> .	of F
Main Effects	326.72	2	163.36	3.78	0.02
Sex	326.53	1	326.53	7.56	0.006
ERIC	2.16	1	2.16	0.05	0.999
Full Taxe Provided by ERIC	659				

TABLE 8.

TWO WAY ANALYSIS OF VARIANCE - SEX BY EDUCATION (NTB DEATH ANXIETY SCALE)

Source of Variation	Sum of Squares	Degrees of Freedom	Mèan " Square	F	Significance of F
Main Effects	482.96	3	160.99	3.78	0.011
Education	227.44	2	113.72	2.67	0•.068·
Sex	378.44	1	378.44	8-88	0.003
N.		<del>-</del>		<del>-</del>	





Factor 1 4 735 015 521	41 .04	. 12 09	.06 01	<u>8</u> .09.
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			-:01	37
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4 .09	- : []	.01	4	.10
804		- 1	-	.06
š <b>-</b> .17				07
1 .07				.07
1 .04	32	•		.05
5 .09	1-5			.44
1 .07	03	.02	-	20
	.08	03	.19	.28%
		25	.04	.26
		24	.02	.01
			.05	.10
•		-	.01	16
	_	-4		22
	_	-		.14:
				1:3 <sup>2</sup>
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1=659



Table 10. Eigen Values, NTB Factors

Factor	Eigen Value	Percentage of Variance									
1.	6.40856	51.7%									
2 <sup>.</sup> .	1.46258	11.8%									
3.	1.09830	8.9%									
4.	0.94641	7.6%									
5.	0.85377	6.9%									
6.	0.71368	5.8%									
7.	0.50022	4.0%									
8.	0.41248	3.3%									

Table 11. INTERCORRELATIONS OF DEATH ANXIETY SCALE ITEMS (# - 659)

																_					٠ _												
Item No.	2	3	4	5	6	,	5	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	_ 24	25	26	27	28	29	30	31	32	33	34
1.	16	.07	15	.Ż6	.20	07	24	10	.01	16	~. 32	19	20	.17	.19	•.17	. 19	22	27	.14	.34	13	.15	.05	.15	01	05	11	20	04	04	27	.09
2.		15	.32	. 26	27	.17	. 32	.20	06	.19	.13	.40	.47	05		.40	16	.17	.28	07	17	.08	16-	05	16	.09	.05	.17	.14	.08 -	.08	.13	10
3.			20	.08	.23	13	:0	27	.17	26	13	05	16	.15	.23	21	.15	11	~.24	.15	. 15	.07	.23	.15	.22	11	13	~.13	15	<b>-,</b> 04	10	.00	.19
4.				19	32	.14	.27	.25	12	.25	.22	.29	. 39	~.09	31	. 36	12	.14	.26-	12	.15	.08	25	13	24	.20	.08	.12	.07	. 12	.14	.14	,16
5.	,				.27	09	63	15	.05	~.17	40	35	31	.22	.28	31	.41	-,12	20	.04	.25	05	.25	.07	.21	12	~.03	07	16	04	08	17	.21.
6.						13	31	26	.12	33	27	29	32	٠٤.	.42	35	. 25	12-	34	.10	.27-	14	.52	.15	.40	17	10	14	17	04	07	.15	. 26
-7.							. 16	.23	19	.17	. 16	.13	. 16	12	12	.21	10	.11	.16	12	14	.22	20	19	18	.10	.43	.11	.04	.04	.19	. 1Ŝ-	13
8.								.29	13	.20	.49	. 39	.37	21	26	.39	39	.17	. 28 -	05	24	.10	24	.12	20	.13	.07	.10	.16	.09	. 15	.19	21
9.									22	. 33	. 34	. 25	. 30	15	27	. 30	. 19	.11	.23	12	13	.15	. 28-	10	21	.16	.19	-11	.14	.10	. 10	.12	14
10.					-					11	14	10	12	.10	.13	12.	.00	04	01	.02	.04	11	.17	.20	.16	0\$	30	.06	.05	04	12	05	.09
11.											.23	.21	.28	06	29	. 30	22	.31	.33	25	22	.11	29	19	32	.27	. 15	. 20	. 26	.18	.09	.15	15
12.												.26	.29	33	25	. 30	21	.13	.24	07	28	.11	.23	08	21	.14	.11-	.03	.13	.01	.18	.22	07
13.										•	••		.54	.00	25	. 39	•.25	.21	. 28	08	.18	.14	17	03	15	.11	.07	.12	.22	.cs	. 10	.11	13
14.														07	.34	.42	25	.24	.35	11	21-	.10	25	10	22	.14	.09	.14	.25-	.12	.12	.16	16
15.															.25	08	.12	05	10	.00	.16	02	.23	.06	.22	08	.05	.07	03	.06	09	-,19-	.13
16,													_			42	.29	13	25	.15	.22	07	.35	.14-	.31	15	.07	08	21	09	-,04	11	.28
17.																	31	.17	. 36	11	25	.14	28	14	-,25	. 7*	.13	.16	.23	.14	.13	.17	21
18,																		12	23	.12	.20	04	.23	.11	.13	10	01	.12	22	~.08	03	08	•30-
19.																			. 30	19	23	.07	16	04	10	.14	.07	.20	.18	.07	.07	.18	12
20.																				27	32	.13	26	-,17	21	.15	-11	.25	,25	.11	.13	.22	17
21.								_													.17	05	-14	.16	.18	11	04	19	15	16	06	02	.14
22.																						09	. 21	.09	. 16	08	08	16	16	08	09	23	.14
23. 24.																							15	17	-			.19	.05	.10	.17	.11	09
25.																								.15		12	-			07	10	14	.32
26.																									. 21	10			05	09	17	14	
27.	•																									.19		09	09	10	11		
28.																											.10	.13	.12	.39	.13	.07	
29.					-																							.17		. 10	.18	.12	•
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Abstract

A FACTOR ANALYTIC STUDY OF A SCALE DESIGNED TO MEASURE DEATH ANXIETY.

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A death anxiety scale developed in 1973 by Nehrke was administered to 655 adult subjects. Their responses were differentiated according to age, sex, race, and level of education. Data were also analyzed using the varimax rotated factor matrix procedure to determine significant factors that the scale was in fact measuring. Loadings on four distinct factors accounted for 92.7% of the variance measured by the scale: fear of isolation and immobility, fear of pain, fear of the future, and fear of physical decomposition. Analyses of variance revealed that older respondents had significantly less death anxiety as measured by this scale than did younger subjects (p<.001), and males indicated significantly less death anxiety than did females in this sample (p<.01). No differences in death anxiety were found by race or educational level. A number of recommendations are made for further modification and revision of the scale.