Does hostility facilitate success in military diving?

Charles H van Wijk

Key words
Psychology, personality, military diving, occupational diving, survey

Abstract

(Van Wijk CH. Does hostility facilitate success in military diving? *Diving and Hyperbaric Medicine*. 2007; 37: 65-7.) Previous studies suggested that divers are more aggressive than non-diver controls, and this study investigated whether hostility scores (measured by the Hostility and Directed Hostility Questionnaire) would distinguish navy divers from comparable general naval personnel and civilian sport divers. Naval divers indicate a stronger need to act out hostility, while civilian divers tend to display less projected hostility and more intrapunitive tendencies. Extrapunitive hostility appears to be a general military attribute, and not particular to diving. The hypothesis that naval divers would report more hostility is not supported.

Introduction

Military diving is dangerous. Military divers habitually engage in high-risk behaviour, and work in a high-risk environment. Previous studies found that military divers, possibly due to the nature of their environment, appear to have more aggressive tendencies than civilians, suggesting that hostility might facilitate success in military diving operations.[1] This hypothesis is supported by older studies that found United States Navy (USN) divers to be more unsympathetic and aggressive than their control group, with a tendency toward social aggressiveness.[2–4] It has been reported that South African Navy (SAN) divers have a strong need to externalise ('act out') aggression, and a tendency to be very critical towards others.[1] Their overall hostility scores were significantly higher than those of sport divers. Sport divers in turn also score high on measures for aggressive behaviour in social situations.[5]

This study compares naval divers with published norm groups and comparable samples to examine whether hostility facilitates success in military diving.

Methods

PARTICIPANTS

The study protocol was approved by the ethical committee of the South African Military Health Service. Three samples participated: naval divers, general (non-diving) naval personnel, and civilian sport divers. Participation in this study was voluntary, and each participant provided written informed consent before participating.

A total of 115 SAN divers (92% of those invited to participate) completed the Hostility and Directed Hostility Questionnaire (HDHQ). They were all qualified clearance divers, and each had 12 years of formal schooling. They were all male. The HDHQ was completed during their annual diving medical examination. In order to determine success in military diving, participants were included in analysis when a number of criteria were met:

- none of the participants had any previous psychiatric history, and all were medically healthy;
- all divers were functionally qualified in their specialty;
- they were all operationally employed in their field for at least the previous two years;
- all participants were past their initial two-year contract (indicating good service in the Navy as divers, and the lack of serious breaches of military discipline).

A sample of 219 general naval personnel (70% of sailors invited to participate) had no diving training or experience. They consisted of sailors from a corvette squadron (N = 180) and harbour protection units (N = 39). All had 12 years of formal schooling; the group included 17 women (7.8%). The HDHQ was completed during their annual health assessment.

The civilian sport divers (N = 22) had no military background, included four women (18%), and had on average three years of tertiary education. Sport divers were recruited from local dive schools, and responded to an invitation by the author to participate in this study. All participants were medically healthy and did not have any history of psychiatric illness.

INSTRUMENT

The Hostility and Directed Hostility Questionnaire (HDHQ) is derived from the Minnesota Multiphasic Personality Inventory (MMPI). It measures two factors of hostility, namely a) a general factor of hostility with various manifestations, and b) a bipolar factor where self-directed and other-directed hostility oppose each other.[6] It consists of five scales, of which three, namely the urge to act out hostility (AH), criticism of other (CO), and projected hostility (PH), are measures of extrapunitive hostility. The other two scales, namely self-criticism (SC) and guilt (G), are measures of intrapunitive hostility. The total hostility

score is the sum of the subscales. The direction of hostility (extrapunitive versus intrapunitive) is calculated using a formula.

The original manual provided norms, based on study scores.[6] The HDHQ has strong discriminant validity and good test-retest reliability.[7,8] It has been said to be the best MMPI-derived measure of hostility.[9] The HDHQ has shown good stability across different samples and different countries, which led to its use with the South African divers.[8,10]

DATA ANALYSIS / STATISTICAL ANALYSIS

All scores were analysed using STATISTICA 7.[11] Descriptive statistics were generated for the HDHQ subscales. The navy divers sample was compared with published results using t-tests for single samples. The scores of the three samples were compared using 1-way ANOVA, with Tukey's HSD test for post hoc comparisons of means. Age and hostility scores were correlated using Pearson's correlation.

Results

The descriptive statistics of the three samples and the reference group are to be found in Table 1. The sample of general naval personnel was older than both the navy and civilian diver samples (both $p < 0.01$).

The naval divers were first compared with the original norm group.[6] Their CO subscale was significantly higher than the original group ($p < 0.0001$), and was raised above the original cut-off point, indicating a tendency to be very critical towards others. The PH subscale was also significantly higher than the original norm group ($p < 0.0001$), but still within normal limits. The other subscale scores did not differ significantly from the norm group.

The total hostility score was slightly elevated, differing significantly from the original norm group ($p < 0.01$). The direction of hostility was in the middle of the scale, indicating neither strong intrapunitive nor extrapunitive tendencies. However, when the naval divers were compared with later norms groups, their total hostility scores were comparable to those of the general population.[7]

In this study, there were significant differences between the three samples in the scores for the urge to act out hostility [$F(2,353) = 8.47$; $p < 0.001$], projected hostility [$F(2,353) = 8.18$; $p < 0.001$], and the direction of hostility [$F(2,353) = 7.56$; $p < 0.001$]. Naval divers had significantly higher scores for the urge to act out hostility than the general naval sample ($p < 0.01$) and the civilian diver sample ($p < 0.05$). The sport divers tended to project their hostility less than military divers ($p < 0.05$) and general navy personnel ($p < 0.01$); further, civilian divers displayed more intrapunitive hostility than naval divers ($p < 0.01$) and the general naval sample ($p < 0.01$) (although it was still within normal limits).

Projected hostility was the only subscale to correlate significantly with age. Older participants reported slightly higher scores than younger divers ($r = 0.20$; $p < 0.05$).

Discussion

The degree of hostility of navy divers is comparable to that of the general population, general naval personnel, and civilian sport divers. The naval divers did report a stronger urge to act out hostility than the other two sample groups. As suggested previously, their environment – referring to both the military context and the physical nature of military diving – may explain why raised AH would be contextually appropriate.[1]

Table 1
HDHQ means and standard deviations of the study samples and reference groups (see text for statistical relationships)

	Norms group[6] (N = 77)	SAN divers (N = 115)		SAN non-divers (N = 219)		Civilian (sport) divers (N = 22)	
	Mean	Mean	SD	Mean	SD	Mean	SD
Age		23.73	3.88	28.05	5.78	24.23	3.61
AH	3.73	3.54	2.01	2.71	1.89	2.32	1.46
CO	3.07	4.44	2.49	4.74	2.49	4.18	1.97
PH	0.60	1.56	1.31	1.83	1.22	0.77	0.69
SC	3.00	2.43	2.20	2.58	2.20	3.09	2.16
G	2.00	1.73	1.16	1.68	1.03	1.64	0.90
Degree of H	11.40	13.69	6.82	13.80	7.57	12.09	4.63
Direction of H	-1 to +1	1.10	4.74	1.58	4.63	-2.45	4.31

(AH – urge to act out hostility; CO – criticism of other; PH – projected hostility; SC – self-criticism; G – guilt; H – hostility)

Does hostility facilitate success in military diving? If success is measured by good adaptation to the military diving environment (e.g., renewed contracts, etc.), then successful naval divers do not seem to have particularly raised hostility scores, and theirs were no higher than other naval personnel, or civilian sport divers. However, the urge to act out hostility did characterise the naval divers in this study, and may be an important construct in examining personality-trait requirements for success in military diving. The finding that civilian divers displayed less projected hostility and directed it more intrapunitively than the two military samples, suggests that external expression of hostility may be an attribute of military samples, and may facilitate success in the military context generally, though not necessarily in the diving environment specifically.

References

1 Van Wijk CH. Levels of anxiety and hostility in South African navy divers. *Undersea Hyperb Med.* 2002; 29: 271-8.
2 Biersner RJ. Social development of navy divers. *Aerosp Med.* 1973; 44: 761-3.
3 Biersner RJ, Cameron BJ. Betting preferences and personality characteristics of Navy divers. *Aerosp Med.* 1970; 41: 1289-91.
4 Beckman TJ, Lall R, Johnson WB. Salient personality characteristics among Navy divers. *Mil Med.* 1996; 161: 717-9.
5 Martin WS, Myrick FL. Personality and leisure time activities. *Res Q.* 1976; 47: 246-53.
6 Caine TM, Folds GA, Hope K. *Manual of the Hostility and Directed Hostility Questionnaire*. London: University of London Press; 1967.
7 Philip AE. Assessing punitiveness with the Hostility and Directed Hostility Questionnaire. *Br J Psychiatry.* 1973; 123: 435-9.
8 Moreno JK, Fuhriman A, Selby M. Measurement of hostility, anger, and depression in depressed and nondepressed subjects. *J Pers Assess.* 1993; 61: 511-23.
9 Spielberger CD, Jacobs G, Russell S, Crane RS. Assessment of anger. In: Spielberger CD, Butcher JN, editors. *Advances in personality assessment* (Vol 3). Hillside: Laurence Erlbaum; 1983. p. 89-131.
10 Ross S, Heath NL. Two models of adolescent self-mutilation. *Suicide Life Threat Behav.* 2003; 33: 277-87.
11 StatSoft. *Statistica Version 7*. Tulsa, OK: Statsoft; 2004.

Charles H van Wijk, PhD, Department of Psychology, Institute for Maritime Medicine, Simon's Town, South Africa
Address for correspondence:
17 Twelfth Avneue
Fish Hoek 7975
South Africa
Phone: *+27-21-787-4541*
E-mail: *<chvanwijk@gmail.com>*