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The utility of the psycholexical approach for identifying military core values: Illustrated in a sample of Swiss career officers and NCOs

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ABSTRACT

Values have always been a top priority in the military domains of leadership, training, ethical commitment, and psychological research. However, only a few studies have assessed value descriptors and their underlying dimensional structure in military organizations using an empirical psycholexical and factor analytical approach. This research project examined the structure of military values and derived core military values. Two studies were conducted in cooperation with the Swiss Armed Forces. In study 1, 25 military-specific value descriptors were identified based on a psycholexical analysis of military guidelines and in line with expert ratings by executive military leaders. In study 2, a questionnaire was filled out by a sample of 550 military professionals to capture their ratings of values as applied to everyday military decisions and actions. Principal component analysis in combination with Goldberg's top-down approach delivered five military value categories that reflect the military culture in Switzerland, characterized as (I) freedom, (II) social cohesion, (III) good soldiership, (IV) mutual respect, and (V) military conformity. Results are discussed in light of introducing a novel research approach to assessing the value structure and culture in military organizations.

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KEYWORDS

Military values; psycholexical approach; dimensional structure; military culture

What is the public significance of this article?— The reported study in this article depicted the current understanding of military values. The psycholexical-oriented approach in combination with an exploration of factor structure led to five superordinate value factors, which reflect the value-landscape in a military organization. In contrast to the traditionally established value systems of military organizations, mostly imposed from above or by history, this article investigates military values using a novel scientific approach in military psychology. This article can serve as a starting point for further scientific work in understanding military values in an international context.

“Make us to choose the harder right instead of the easier wrong, and never to be content with a half truth when the whole can be won”

(From the Cadet Prayer, U.S. Military Academy, 2022)

Military organizations differ from civilian organizations in many respects, especially in reference to the specific culture and its values and traditions (Soeters et al., 2006). *Military culture* can be characterized by professional commitment that emphasizes discipline, obedience, courage, trust, and self-sacrifice, and setting the

primacy of the group over the individual (Collins, 1998; Hall, 2011). In addition, military organizations have long recognized that morally good, positive characteristics of personality have a strong influence on work satisfaction, individual performance, adaptation, and effective leadership (Matthews et al., 2006). The overall importance of character strengths, virtues, and values within the military is widely documented (Caslen & Matthews, 2020; Matthews, 2014). More specifically, recent studies have focused on positive associations between values and motivation (Clemmons & Fields, 2011), leader performance (Bartone et al., 2002), resilience (Zimmermann et al., 2014), and optimal team performance (Blackadder-Weinstein et al., 2019). They provide evidence concerning the types of values that are associated with different positive outcomes in military populations.

Still, there is little verification through empirical evidence regarding what individual values characterize military culture and what *dimensional structure* underlies a military value catalog. In contrast, outside of the military domain, there has been increasing interest in identifying and structuring taxonomies of universal values. Specifically, the question of how many basic values can be distinguished has been investigated in

a variety of different cultures and professions (e.g., Aavik & Allik, 2002; Grace et al., 2017; Morales Vives et al., 2012; De Raad & Van Oudenhoven, 2008; Schwartz, 1994; S. Schwartz, 2006). A common method for assessing the structure of universal values in personality psychology is the *psycholexical approach*, which is based on the lexical hypothesis by Goldberg (1981). This approach assumes that people wish to talk about what is important to them and that the words they use for this purpose are found in the lexicon. Consequently, the psychological approach can be used to identify the most important characterization of human behaviors. Additionally, this method enables the researcher to identify a comprehensive set of descriptors of the psychological concept of interest. The lexical hypothesis has mainly influenced the research on personality being used to classify personality traits and to develop the Big Five model. Subsequently, it was applied successfully to study universal values (Aavik & Allik, 2002). This study takes this further and is the first to adopt the psycholexical approach to capture individual *military values* and to determine the underlying organizing structure of the values. In this paper, we report on the research procedure as applied in the context of the Swiss military.

Conceptualizing and operationalizing values

Psychological literature refers to numerous definitions and theoretical approaches to describe values. It is therefore not surprising that definitions vary. As Wolf et al. (2021) stated, values are among the most fundamental psychological constructs because of their abstract nature enabling persons to use as markers of common ideals. According to Hitlin and Piliavin (2004, p. 362) values can be conceived as a formation of an “internal moral compass.” Also, values are usually considered as conceptions of the desirable, which impact their choices and evaluation (Kluckhohn, 1951). Schwartz (1992) established a very influential understanding and focused on the motivational power of values. He defined them as desirable goals that vary in importance across situations and that serve as guiding principles in people’s lives. Similarly, Maio (2016) and Fischer (2017) view values as abstract goals with a function as life-guiding principles. As an overview, Schwartz and Bilsky (1987) concluded on five formal features of values, which are usually addressed in definitions: “According to the literature, values are (i) concepts or beliefs, (ii) about desirable end states or behaviors, (iii) that transcend specific situations, (iv) guide selection or evaluation of behavior and events, and (v) are ordered by relative importance” (p. 551). In accordance, the application of

the concept of values implies individual, social and organizational aspects. The present study investigates the structure of values as they pertain to individuals and takes a personality psychological perspective. We assess a value as “a relatively enduring characteristic of individuals that reflects what is important to them and that guides them in their behaviors and decisions” (De Raad & Van Oudenhoven, 2008, pp. 85–86). Before describing the different theoretical structure of values, it is important to consider perspectives on the assessment of a value and conclude on how values differ from other concepts. Studies on individual differences showed that values correlate with measures of similar concepts of personality such as traits, social attitudes and virtues. Personality traits are understood as relatively stable characteristics that determine how people think, feel, and act (Johnson, 1997). Roccas et al. (2002) pointed out that traits are enduring dispositions and values are enduring goals. Fischer and Boer (2015) provided a meta-analytic summary of the relative associations between personality traits and values and suggested that this relation is shaped by contextual factors. As opposed to values, a social attitude is described as a feeling toward a specific object or social interaction focusing on “nasty” aspects of social beliefs (Boer & Fischer, 2013; Stankov, 2007). Virtues have in common with values that they refer to relatively stable desirable characteristics of individuals (De Raad & Van Oudenhoven, 2011). The difference is seen that virtues are a subset of traits that dispose people to behavior and values convey what people find important in a sense of moral preference (Morales-Vives et al., 2014).

Relating the specific assessment of values, we summarize that many value theorists (i.e., Rokeach, 1973; Schwartz, 1994) have operationalized values as conscious goals that can be articulated (Bernard et al., 2003). Maio (2010) investigated the mental representation of values and concluded that interpersonal differences in values are determined by different value priorities. Complementary, the psycholexical approach we used in the present study to assess military values is emphasizing the verbal transactions of conscious value principles in the military context. These guiding principles are included as important value-descriptive expressions in military documents and military personnel endorse them as military values.

The structure of values: Application of the psycholexical approach

The question how many basic values can be distinguished is investigated in groundbreaking research by Rokeach (1973) and Schwartz (1994). Their studies

mainly followed a facet theoretical approach, using facets as sets of variables to semantically represent the content of a latent component (Guttman, 1959). By means of this approach to theory construction, Schwartz (1992) initially identified seven motivational domains of values and ultimately increased it to 10 domains. Subsequently, he projected values on to a two-dimensional space of similarities via nonmetric multidimensional scaling (MDS) and established the circular model that represents a universal structure of human values. Schwartz's conceptional framework strongly influenced the research on universal values and has been validated in studies over 200 samples from more than 70 countries (Fischer & Schwartz, 2011; Schwartz, 2004; Schwartz & Rubel, 2005). As a well-established model to map and interpret cultural differences in values, it has been variously used by researchers in interviews, surveys, and experimental studies. For instance, Suedfeld (2006) and Suedfeld et al. (2010) assessed Schwartz's value hierarchies in astronauts via content analysis of autobiographies, interviews, and oral histories.

Aavik and Allik (2002) initiated a new method of values research and gave preference to the psycholexical approach as a basis for developing an exhaustive and culturally sensitive list of universal values in the Estonian language. As opposed to the facet theoretical approach, the advantage of this method is that the rational identification of the facets is independent of the insights of the theoretician (De Raad & Hendriks, 1997). Schwartz (2017) confirmed in his commentary that "the lexical approach has the potential to identify values that are over- or underrepresented in a theory-driven approach" (p. 439). A series of researcher immediately followed this novel study design, e.g., Renner (2003; for the German language in Austria), De Raad and Van Oudenhoven (2008; for the Dutch language), and Morales Vives et al. (2012; for the Spanish language). The psycholexical studies on universal values delivered between four (e.g., Renner, 2003) and eight factors (e.g., De Raad & Van Oudenhoven, 2008). Some of the values have been replicated in different cultures or correspond to equivalent factors with different labels. Other values seem specific to the culture and accordingly could not be easily replicated. This result accords with De Raad and Van Oudenhoven's (De Raad & Van Oudenhoven, 2008) assumption that different cultures have distinct sets of values. Accordingly, the psycholexical assessment seems to be a useful tool for revealing cultural differences in values. Assuming that a military organization reflects a specific culture (Apelt, 2010), it is of interest to assess individual military values by applying a psycholexical approach and conclude on the corresponding factorial structure.

Research on values as part of military psychology

Studies investigating the extent to which the military culture shapes the values of military leaders have been conducted in the United States (e.g., Bachman et al., 1987), Germany (Jackson et al., 2012), South Africa (Franke & Heinecken, 2001), Australia (McAllister, 1995), and Japan (Inagaki, 1975). Recent studies have focused on the fundamental question of how to ensure a desired military culture by means of selection and socialization (for an overview, see, Annen, 2017; Jackson et al., 2012). In sum, there has been little research on the structure of military values that could aid description and yield a better understanding of the value culture of a military organization. Kjaergaard et al. (2013) assessed personal values within the specific sample of special unit patrol teams operating in a polar environment. Self-direction, universalism, and stimulation had the highest ratings on the Schwartz values. Blackadder-Weinstein et al. (2019) explored value dimensions within a military women Antarctic expedition and determined a profile with high self-ratings on hedonism, stimulation, and self-direction. Sundberg (2016) identified values among International Security Assistance Force contingent on tour in Afghanistan with self-direction, benevolence, and hedonism showing the highest ratings. Schumm et al. (2003) explored the structure of military values in the U.S. Army using various measures of professional military values on a questionnaire with 15 value-related items administered to soldiers. The factor analysis based on the collected ratings yielded four factors: (1) military dedication (loyalty to the U.S. Army, to the nation, and willingness to risk one's life), (2) integrity (being honest and doing what is right), (3) military bearing (maintaining high moral standards on- and off-duty, and showing proper respect to others), and (4) job commitment (job dedication, personal drive to succeed, and being committed to working as a team). Scales of military values developed from the factors showed high internal consistency as well as significant correlations with important outcome variables, such as individual morale and retention intentions. However, the study was based on a preexisting list of value items and did not focus on culture-specific aspects in selecting these items from the military context.

Franke and Heinecken (2001) demonstrated that officers of different nationalities (in that particular study, among South African Military Academy cadets and U.S. West Point cadets) differed significantly in their value orientation. With this diversity in cultural and demographic value orientations in mind, the present study examined values in the military context. Specifically, we collected data in the Swiss Armed Forces (SAF), which

represents a military institution that expects its members to behave in accordance with values such as responsibility, loyalty, and honesty (according to the service regulations of the SAF). It can therefore be seen as a value-oriented organization (Proyer et al., 2012). The SAF, with its militia system of compulsory military service, is regarded as a mirror of society in its reflection of values. The training goal of the SAF includes distinct efforts to strengthen and influence values (Annen et al., 2004). These pedagogical directives therefore make it a mandate to understand the predominant core values that may be incorporated into the training of soldiers. The SAF does not have a representative definition of classified core values, such as that contained in U.S. Army doctrine in Field Manual 22–100 naming loyalty, duty, respect, selfless service, honor, integrity, and personal courage (LDRSHIP; U.S. Department of the Army, 1999, p. B-2). The Swiss Federal Report on Military Ethics (Schweizer Armee, 2010) therefore expressed a strong interest in conducting research on values that are in alignment with the culture of the Swiss military organization.

Aims of this study

This research addressed two main questions: (1) What is the dimensional structure of military values as it applies to the SAF?, and (2) To what extent does the psycholexical approach succeed in assessing values in a military organization? Using an exploration of factor structure in combination with Goldberg's (2006) top-down procedure, we focused on assessing the factor structure of the corresponding military value-describing terms and on reflecting on the specific character of the obtained factors. The specific procedure was aimed at mapping the current landscape of military values and at defining an organizing structure of the military values. This was done in the context of the Swiss military. We then evaluated advantages and disadvantages of this methodological approach regarding its application in a military organization.

Method

Two studies were conducted: In study 1 we aimed to select and establish a set of the predominant military value-describing words via the psycholexical approach as well as via interviews with high-ranking military commanders of the SAF. In study 2 we tested a sample of Swiss professional officers and NCOs and analyzed the structure of the military values. It is worth mentioning that this present study is part of a comprehensive project on military values and virtues. Specifically, we

focus on the concept of values assuming a distinct difference between values and virtues according to the consistent theoretical understanding (e.g., Morales-Vives et al., 2014).

Study 1: Psycholexical search and development of a list of military values

The selection of the value descriptors took place in three steps. To reach the overall goal of a full list of military values, in the first step we conducted a psycholexical-oriented search of relevant military documents using existing duty regulation documents, which are military directives that enforce mandatory behavior for every military member of the SAF. Consequently, this approach differed from the classical psycholexical approach. From a methodology viewpoint, the descriptions of behavioral mandates as used in the military documentation are presented differently than in a standardized lexicon: There were no glossaries of expressions, no use of synonyms, and no explicit differentiation of adjectives and nouns. Whereas the words from the regular psycholexical approach already exist in the lexicon, military values needed to be included in military duty regulation documents, as military personnel endorsed these values as military values. As such, the descriptions sourced from the military documentation are already pre-selected terms that are considered authorized and in effect from a normative military perspective. We analyzed the following documents: the Swiss Federal Report on Military Ethics (Schweizer Armee, 2010), the Service Regulations of the SAF (Schweizer Armee, 1994), and guidelines used for ethical training on values in the SAF (e.g., Annen et al., 2004). The overall number of pages used for content analysis was approximately 350. The first author of this study teamed up with an experienced military lead commander to scan the documents for expressions describing military values. Accordingly, judges had to go through the documents, with the instruction to identify the value-descriptive terms. Several criteria for this selection of expressions were developed. The criteria were: (a) select expressions that refer to desirable and positive characteristics or behavior that influence the way military persons make choices and evaluations, and (b) give priority to nouns over adjectives or verbs. According to Aavik and Allik (2002), nouns are preferable for expressing values because people usually think of values in noun form. We ensured that the two persons making the selections independently covered all content and discussed the selected output with each other. The two persons met after finishing their screening and agreed

upon a final selection of 90 expressions. Conducting the whole procedure took about three months.

To ensure that values were considered specifically (as opposed to theoretical understandings of a virtue), in a second step 11 judges rated the 90 extracted expressions. The judges were licensed psychologists with several years of experience as assessors in the selection of career officers and NCOs. They had an affiliation to the military culture and knowledge about values. Additionally, they were introduced to the basics of research in values and the idea behind lexical analysis. The head of the research team was present during the whole procedure, so that the raters could ask questions in case of uncertainty. They rated the extent to which the selected terms could be considered as values in the Swiss military culture. They were instructed to indicate for each of the 90 expressions their individual rating according to the clear definition that a value is “a relatively enduring characteristic of individuals that reflects what is important to them and that guides them in their behaviors and their decisions” (De Raad & Van Oudenhoven, 2008, pp. 85–86). Following a procedure similar to that used in the Dutch values study (De Raad & Van Oudenhoven, 2008), they rated each term on a 4-point scale ranging from 1 (*clearly not a value*), 2 (*probably not a value*), 3 (*probably a value*), to 4 (*very clearly a value*). For each term, a sum score was calculated over the 11 raters; this sum score was an index of value- and virtue-descriptiveness. For the values the sum score ranged from 13.00 to 44.00. The mean of the sum scores was 29.00 ($SD = 7.70$). Following De Raad and Van Oudenhoven’s (De Raad & Van Oudenhoven, 2008) methods, all terms with a sum score of 33.00 or higher were identified as value descriptors (sum scores below 33.00 meant that judges on average did not regard these expressions as values). The same procedure was applied to assess the virtue-descriptiveness. Thirteen terms did not meet the criteria for being a value or a virtue and were therefore skipped. To control and verify the accuracy of the ratings, 10 distracting and nonrelevant terms were inserted, e.g., shoe size, marital status, multilingualism, and impatience, which are definitely not defined as values. All 11 judges recognized these “false” values and rated these terms 1 or, a maximum of 2 (which was the case for multilingualism and impatience by two raters). After this second step, the resulting list consisted of 25 military values, including human dignity, role model, peace, and hierarchy.

In a third step, we consulted with high-ranking leaders of the SAF to ensure that the 25 targeted military value-describing terms were relevant from a military

perspective. The individual military leaders were identified by their military rank (brigadier general and higher) and function (e.g., commander of a training unit), which represented their influence in applying values within the “top-down hierarchy” of the SAF. We received full support from all 22 generals of the SAF, including the chief of the SAF (lieutenant general). The generals were asked to rate each value to the extent that it was meant to guide the military person in his or her everyday military decisions and actions. A 4-point Likert scale was used, with response options 1 (*military personnel should not be guided by this value*), 2 (*military personnel should often be guided by this value*), 3 (*military personnel should be guided whenever possible by this value*), and 4 (*military personnel should be guided at all costs by this value*). The mean inter-rater correlation (Pearson correlation) was .63, with the highest correlation between two raters of .70 and the lowest of .54. The highest mean ratings were for human dignity ($M = 3.82$, $SD = 0.50$) and honesty ($M = 3.82$, $SD = 0.40$); the lowest mean rating was for autonomy ($M = 2.45$, $SD = 0.18$). The average mean of the 25 items over the military raters was 3.21, with a median of 3.14, indicating that these selected value descriptors were considered important by the military experts. We therefore decided to retain the full list of 25 military values. This list of 25 military values was then administered to a large sample of military professionals in study 2, which focused on the subordinated level within the military hierarchy.

Study 2: Structuring the military value-describing terms

Participants and procedure

The sample consisted of 249 career officers and 301 career noncommissioned officers (NCOs) of the SAF ($N = 550$); 542 were men, and 8 were women. Their ages ranged from 24 to 61 ($M = 42.41$, $SD = 8.62$). Career officers included 13% colonels, 15% lieutenant colonels, 11% majors, 6% captains, and 1% first lieutenants. Among the career NCOs, there were 2% chief warrant officers, 8% master warrant officers, 24% staff warrant officers, and 22% warrant officers. The military professionals were assigned to different forces or departments, with 68% working for the Land Forces, 20% for the Air Forces, and 12% for other departments, such as Military Security or Special Forces. This sample appeared to be representative for the military professional corps.¹ The sample size clearly exceeded the size required to guarantee stability of components (see, Guadagnoli & Velicer, 1988). For the data analysis, 39 participants with missing and unusual answers were removed.²

Measures

List of 25 military values. We used the list of 25 military values as selected in study 1. The instructions asked the participants to rate each value on the extent to which they are guided by that value in their everyday military decisions and actions. Response options on the 4-point rating scale were: 1 (*I am not guided by this value*), 2 (*I am often guided by this value*), 3 (*I am guided whenever possible by this value*), and 4 (*I am guided at all costs by this value*).

Results

Primary analyses

The means for the ratings of the 25 military value-describing terms ranged from 4.46 (multiculturalism) to 6.37 (honesty), with an average mean of 5.72. Skewness and kurtosis indicated close normal distribution, except for the ratings of human dignity ($Sk = -1.60$ and $K = 3.05$) and honesty ($Sk = -1.57$ and $K = 3.55$) showing leptokurtic distributions.³ Correlations with demographics were generally moderate in size, but statistically significant correlations were found between age and the military values trust, fairness, respect toward others, human dignity, honesty, freedom, peace, and multiculturalism. Effects disappeared when partial correlations were calculated, with age as a controlling variable. Therefore, all subsequent correlational analyses were controlled for potential impact of this demographic variable.

Factor structure of military values

According to Schwartz (2004), data analysis via MDS is an appropriate method to confirm that the continuum of value items can be partitioned into narrow facets. However, Schwartz (2011) also stated that the use of alternative methods such as structural analysis (e.g., finding hierarchical structures of facets within broad values) may clarify which facets are distinguishable. To examine the hierarchical factor structure of the selected set of military value descriptors we followed the procedure of previous psycholexical studies in the domain of values. Consistent with the procedure by De Raad and Van Oudenhoven (2008), a principal component analysis (PCA) with orthogonal varimax rotation was conducted. Saucier (2002) suggests that orthogonal factors have the advantage to identify markers that are maximally unrelated to each other. Thus, the goal is to contain the maximum amount of information in fewer variables and it is therefore a useful tool for dimension reduction (Goldberg, 2006). The Bartlett test of sphericity indicated that the variables fit the conditions for computing a PCA ($p < .001$). Factors of military values

were retained based on their eigenvalues (scree test, parallel analysis of random data), on the hierarchy of factors, and according to the interpretation of the solution. The scree test did not provide a clear direction on how many factors to extract (first eight eigenvalues were 6.81, 2.28, 1.61, 1.49, 1.22, 1.04, 0.98 and 0.81), and a parallel analysis (Horn, 1965) suggested that five eigenvalues were greater than chance. These first analyses indicated that a maximum of six factors were considered to be relevant. To gain further insight into the factor structure and to allow comparison of several solutions, the hierarchical factor analysis procedure by Goldberg (2006) was performed. The goal of this methodological procedure was to provide a hierarchical structure in which the factors at every single level are independent of those of all levels above and below it. Solutions with two to six factors were extracted to show how the factors unfold, with varimax rotation in each case. The factor scores were saved for each solution, and correlations between factor scores at adjacent levels were computed. Figure 1 shows the hierarchical structure from one factor (the general value factor) to six factors and the succession of factor extraction.

The order of the factors in the solutions in Figure 1 shows that after the general factor was split into two broader factors, one factor (2/2) emerged that was very robust throughout the fourth level of the hierarchy. Highest loadings on this broad factor were found for obedience, hierarchy, performance of duty, and performance of mission. This factor was tentatively labeled “military dedication.” At the next lower hierarchy level this factor (4/1) split into “good soldiership” (5/3) and “military conformity” (5/5). The second factor (2/1) called “prosociality” was split into two factors at the next lower hierarchy level. Factor (3/1) was split into “freedom” (4/2) and “social cohesion” (4/3), which remained identical from the four-factor solution to the five-factor solution. The results in Figure 1 indicated that the solution with more than five factors was difficult to interpret. Specifically, the new factor 6/6 lost substance, showing only a few items (positive loadings: trust and honesty; negative loading: multiculturalism) with sizable loadings on the respective factor. Moreover, double or triple loadings on other factors were yielded. For this reason, we decided to retain the five-factor solution, which explained 53.60% of the variance and could be well interpreted on the content level.

Five military value factors

The extracted five factors of military values are discussed in more detail as follows. Table 1 provides an overview of the military values descriptors with the highest loadings on the respective factors (five-factor solution).

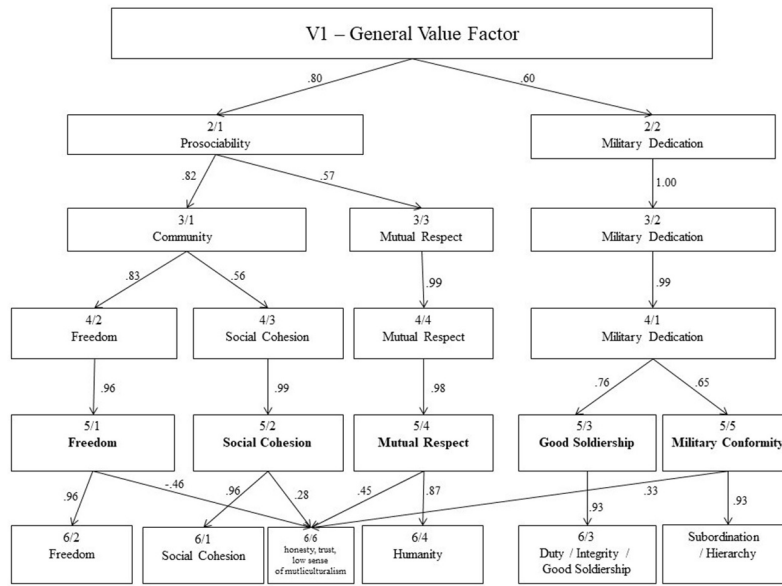


Figure 1. Hierarchical structure of the varimax-rotated factors emerging from the exploratory principal component analysis of the 25 military value descriptors, starting from a general factor to a six-factor solution (V1, first unrotated principal component); numbers within boxes indicate the number of factors extracted for a given level; boldface indicates final five-factor solution; correlation coefficients to adjacent factors are only displayed when exceeding a coefficient > .25. *n* = 550.

Factor I: freedom

As Table 1 shows, this factor covered six military value descriptors (peace, freedom, multiculturalism, justice, autonomy, and security) that reflect ideologies of a military mission fostering social union, peace, and

security within a larger society. Security showed equivalent loading on factor IV (.33 [.32 on factor I]). We decided to assign security to factor I, due to the closeness in contextual meaning. This factor accounted for 12.15% of the variance.

Table 1. Varimax loadings of the five factors based on the ratings of the 25 military value-descriptive terms.

German term	English translation	Factor I	Factor II	Factor III	Factor IV	Factor V	<i>h</i> ²
Frieden	Peace	.69	.08	-.03	.28	.25	.61
Freiheit	Freedom	.65	.09	-.09	.22	.13	.51
Multikulturalität	Multiculturalism	.65	.18	.13	.03	.07	.47
Gerechtigkeit	Justice	.57	.11	.08	.38	.05	.49
Autonomie	Autonomy	.59	.29	.12	-.07	-.03	.44
Sicherheit	Security	.32	.16	.19	.33	.28	.35
Kameradschaft	Comradeship	.11	.69	.23	.02	.00	.54
Zusammenhalt	Coherence	.27	.66	.16	.04	.12	.55
Solidarität	Solidarity	.27	.63	.08	.18	.00	.51
Zusammenarbeit	Teamwork	.18	.63	.00	.12	.16	.47
Vertrauen	Trust	-.09	.58	.01	.38	.11	.50
Korpsgeist	Esprit de corps	.35	.45	.44	-.15	.06	.55
Pflichterfüllung	Performance of duty	-.01	.19	.71	.21	.13	.61
Auftragserfüllung	Performance of mission	-.13	.07	.64	.20	.28	.55
Vorbildlichkeit	Role model	.09	.02	.61	.20	.13	.44
Ehre	Honor	.43	.19	.55	-.12	.08	.54
Rechtstreue	Obedience to the law	.29	.03	.37	.31	.29	.40
Menschenwürde	Human dignity	.14	-.04	.16	.71	-.07	.55
Respekt	Respect	.12	.22	.28	.70	-.04	.63
Achtung des Nächsten	Respect toward others	.39	.28	.19	.59	-.01	.61
Ehrlichkeit	Honesty	-.03	.38	-.03	.45	.34	.47
Fairness	Fairness	.31	.34	-.22	.40	.26	.49
Einordnung	Integration	.15	.13	.13	-.02	.83	.75
Hierarchie	Hierarchy	.20	.05	.34	-.01	.73	.69
Gehorsam	Obedience	.03	.14	.51	.00	.64	.69
variance explained (%)		12.15	11.65	10.73	10.10	8.93	

n = 550. Extraction: Principal component analysis. Rotation: Varimax. Boldface indicates highest factor loadings of the terms. Second loadings ≥ .30 are in italics. Total variance explained: 53.60%. Factor I = freedom, factor II = social cohesion, factor III = good soldiership, factor IV = mutual respect, factor V = military conformity.

Factor II: Social cohesion

Factor II accounted for 11.65% of the variance. The descriptors of this factor referred to group ties and social cohesion. It encompassed comradeship, coherence, solidarity, teamwork, trust, and esprit de corps. These items expressed interpersonal behavior that is typically accepted within a larger social group.

Factor III: Good soldiership

This factor was summarized as good soldiership, as it included descriptors referring to the mind-set and characteristics of a competent military person. It covered performance of duty, performance of mission, role model, honor, and obedience to the law. Overall, factor III accounted for 10.73% of variance.

Factor IV: Mutual respect

Factor IV accounted for 10.10% of variance and yielded high positive loadings on human dignity, respect, respect toward others, honesty, and fairness. It expressed personal behaviors resulting in successfully interacting with other people, striving for social equilibrium, and genuine expression of respect toward others.

Factor V: Military conformity

This factor accounted for 8.93% of variance and was termed military conformity, as the three descriptors of this factor were integration, hierarchy, and obedience. This factor seemed to convey facets of the military regulations and hierarchy as characteristics of a military organization. High scorers on this factor could best be described as persons who like to integrate themselves in the hierarchical order of military society.

Discussion

This research represents an initial comprehensive effort to apply the psycholexical approach to assessing the structure of military values. Values considered important within the Swiss military were cataloged based on the psycholexical approach and on ratings by high-ranking military leaders (study 1) and then structured according to the ratings of these selected military values as guiding principles in the everyday military life (study 2).

One of the main questions in this paper concerns the dimensional structure of military values. Using Goldberg's (2006) top-down approach, the hierarchical factor structure of 25 military values in Figure 1 supports the decision to give preference to the five-factor structure. The five factors were: freedom (I) (peace, freedom, justice, autonomy, and multiculturalism); social cohesion (II) (comradeship, coherence, solidarity,

teamwork, esprit de corps, and trust); good soldiership (III) (performance of duty and of mission, role model, honor, and obedience of the law); mutual respect (IV) (human dignity, honesty, respect toward others, respect, and fairness); military conformity (V) (integration, hierarchy, and obedience). Freedom (I) and mutual respect (IV) can be qualified as general factors, with the highest spread of contributive loadings across all military value items. Interestingly, these two military value factors reflect the prime aim and justification of the SAF in providing key services to the general public (Schweizer Armee 2004). The Swiss militia system is a kind of national guard, consisting mainly of civilians in uniform. Working together in the military is therefore based on a successful balancing act between autonomy (expressed in the values of factor I, freedom) and mutual respect (equivalent to the values in factor IV, mutual respect). In addition, the course of the hierarchical factor analysis indicated a stable grouping of the factors freedom (I), social cohesion (II), and mutual respect (IV) versus a group comprising good soldiership (III) and military conformity (V). It is noteworthy that this distinction replicates two important basic principles of "menschenorientierte Führung" ["people-oriented leadership"] (Steiger, 1991), a concept that has strongly characterized the understanding of leadership in the SAF for 30 years. The first principle pertains to people-orientation, which sets the scope of action for staff, the mutually respectful interactions, and the exemplary role of leadership. These aspects are depicted in factors I, II, and IV. The second principle comprises fulfillment of the mission, which is ensured by the military framework conditions (factor V) and a mission-centered basic attitude (factor III). The identified military value factors can be interpreted as "core values" and seem to map out well the leadership principles in the SAF.

The question naturally arises as to how the taxonomy found here fits in with already existing research on military values. With no other similar military studies available applying the psycholexical approach, there was no direct framework to validate the outcoming structure. The qualitative comparison of the existing military studies such as by Blackadder-Weinstein et al. (2019), Kjærgaard et al. (2013), and Sundberg (2016) indicates that there are both overlaps and congruence in the respective highly scored values. Similarities are particularly evident with the Schwartz values self-direction, universalism, and benevolence. However, because of the different contexts and methods of the various existing studies on military values, there is the risk of drawing false conclusions from the comparisons. The question then arises as to what value areas emerge in a specific military context in comparison with other

systems of values, regardless of the method. Table 2 presents an overview of current findings relating to the two non-psycholexical value systems by Schwartz (1994) and Schumm et al. (2003) and to the psycholexical systems of Renner (2003). Obviously, some factors overlap. Specifically, the factors military conformity (V) and good soldiership (III) are both well captured in the Schwartz factor conformity which points to commonality regarding being a role model and being dedicated to performance of the mission as it applies to a solid military person. Likewise, military conformity (V) corresponds with the factor military dedication whereas good soldiership (III) aligns with the factor integrity by Schumm et al. (2003). Freedom (I) is partially reflected in the Schwartz factor security, in the Schumm et al. factor job commitment and in the Renner factor intellectualism, describing possible motivational components and the multicultural mind-set of a military person. Mutual respect (IV) aligns with military bearing by Schumm et al. (2003), describing a personal profile of concern for others and of having high moral standards. Additionally, mutual respect (IV) finds relatively good replication in the Schwartz factor universalism. Social cohesion (II) is partially well reflected in the Schwartz

factor benevolence. Overall, the five military factors show a plausible representation in the other systems, especially to the military-specific system of values by Schumm et al. This would confirm the assumption that the two military-specific systems show a certain homogeneous profile. However, there are factors from this current study which do not correspond to any factor from Schumm et al. (e.g., social cohesion (II)). Differences between the related systems of values may be due to a variety of reasons. Selection of value variables representing the methodological approach is probably one of the most influential factors determining the value structure (see, Peabody & Goldberg, 1989). Additionally, the difference in military culture may contribute to the difference in outcome. More concretely, the U.S. Army maintains its focus on operational military targets and missions, whereas the SAF spends the most of its time training for operational readiness.

Another aim of the paper relates to verifying application of the psycholexical approach in the military setting. This research is based on the assumption that the military culture differs from the civilian environment (Matthews et al., 2006; Soeters, 1997). Accordingly, it was of significant interest to capture the uniqueness of

Table 2. Overview and comparison of different systems of values.

	Schwartz (1994) 10 universal values	Renner (2003) 5 universal values	Schumm et al. (2003) 4 military values	Eggimann, Ruch & Annen (under review) 5 military values
military-specific			x	x
psycholexical		x		x
	<i>Conformity</i> honoring parents; politeness, self-discipline		<i>Military dedication</i> loyalty to the nation; discipline; duty; dedication to serving	<i>(V) Military conformity</i> integration; hierarchy; obedience
	<i>Tradition</i> Detachment; moderate; respect for tradition	<i>Conservatism</i> national identity; tradition; duty	<i>Integrity</i> doing what is right; responsibility; truthful	<i>(III) Good soldiership</i> performance of duty and mission; role model; honor; obedience of the laws
	<i>Security</i> clean; family security; social order	<i>Intellectualism</i> reflection; open-mindedness; culture	<i>Job commitment</i> personal drive; dedication to learning; progressiveness	<i>(I) Freedom</i> peace; freedom; multiculturalism; autonomy
	<i>Power</i> wealth; authority; preserving; public, image	<i>Profit</i> wealth; possession; career		
	<i>Achievement</i> intelligent; ambitious; successful			
	<i>Hedonism</i> Pleasure; enjoying life			
	<i>Stimulation</i> varied life; exciting life; daring			
	<i>Self-Direction</i> choosing own goals; creativity; independent			
	<i>Universalism</i> world at peace; broadminded; unity with nature	<i>Salvation</i> faith in God; piety; religion	<i>Military bearing</i> moral standards; respect; military courtesy to others	<i>(IV) Mutual respect</i> human dignity; respect; honesty; fairness
	<i>Benevolence</i> Forgiving; helpful; true friendship	<i>Balance</i> fairness; trust; human rights		<i>(II) Social cohesion</i> comradeship; coherence; solidarity; trust

the military values of the SAF. The psycholexical method has been described as sensitive to culture-related differences (De Raad & Van Oudenhoven, 2008). The advantage of the method is that it can map out the current understanding of values in military culture. In addition, the multistage and inductive procedure in study 1 and study 2 has the advantage of being able to capture the different views on values via the different hierarchical levels (high-executive military leaders, career officers, and career NCOs).

With the goal of developing structural representations of military values it is recommended for investigators to analyze data in various ways (Goldberg, 2006). The present article aims to introduce a new option to assess values in a military organization. It is not seen as a replacement but as a supplement to the techniques previously available. Accordingly, the method applied in the present study based on the psycholexical approach and hierarchical factor analysis yielded benefits in identifying military values, examining the relations between essential military value-describing terms, and reducing the corresponding dimensions.

The present methodological approach was chosen because of the specific characteristics of the SAF. First, there are still no comprehensive description and classification that reflect the cultural-specific aspects of the military organization and the views of the different military subgroups (e.g., including active reserve and military professionals). Moreover, there are numerous value-descriptive expressions, such as responsibility, loyalty, security, and freedom, used in official and unofficial Swiss military documentations that need further structuring for effective military leadership. Second, the majority of army personnel belong to the active reserve, i.e., they attend an 18-week basic training course and then take part in a three-week refresher course every year as civilians in uniform. Thus, even if military values were laid down in official documents, it would still be highly questionable whether and how these values would be perceived and implemented in view of the short time spent in the military. It was therefore appropriate to capture the current landscape of values in a structured way and to map it in such a way that the complexity was reduced to a manageable level. This was achieved with the five essential value factors reflecting the military culture in the SAF.

Accordingly, this approach also serves other armies seeking to independently record the values lived in practice and compare them with existing guidelines. This would provide them with relevant information on the extent to which the values laid down in official documents correspond to the values lived and experienced at the grassroots level. Moreover, existing value

systems are based on very different historically and politically evolved foundations. Thus, the approach chosen here could also be used to make a genuine, systematic comparison of the value structures of different armed forces.

For cross-cultural comparability, it is essential to apply similar psycholexical procedures when studying the factorial structures of values in various military organizations, depending on their different training combat or training missions. The assumption by Matthews (2008) that values that are important in combat differ from those vital to success in training or in an administrative job within the military has not yet been empirically tested; this would be an interesting future research question that is relevant for optimizing collaboration in cross-national staffs. Future studies could examine whether certain value constellations in soldiers make it more likely for them to enlist and to aspire to a cadre position and whether this value constellation explains variance in these dependent variables above and beyond individual differences (e.g., Big Five, IQ).

There are two primary limitations of the current study that should be discussed. First, a lexical-based assessment is a demanding and time-consuming process. Accordingly, it is critical to well decide on a standardized definition to extract the appropriate value-descriptors. In this research we adopted the definitions from De Raad and Van Oudenhoven's (De Raad & Van Oudenhoven, 2008, 2011) Dutch studies, which could have directly influenced the psycholexical-oriented selection of value-describing expressions. Second, rather than using a standardized language-specific dictionary, we identified and selected the expressions in military documents, resulting in a "psycholexical approach adapted for the military." Unlike a traditional dictionary, the military documentation was composed of behavioral directives revealing a high degree of normative value-describing expressions that were desirable from a military viewpoint. As a complement, the rating format includes a direct rating, with the possibility that different values can be equally important. These factors could have biased the response behavior of the military sample to score all value items as favorable. For example, many military personnel may view achievement or military dedication as an important value, as the military context implicitly and/or explicitly rewards and recognizes outstanding achievements. Our identified first factor includes freedom and security as important values, given that the common military missions in international peace support reward and recognize outstanding achievements. The latter point is combined with a suggestion for future studies. According to Van

Eijnatten et al. (2015), ipsative measures can be applied in research on organizational values, because they may lower the risk of a social desirability response bias. A ranking format assesses the relative prominence of each of the presented values within the respondent's intra-individual profile, not the absolute strength of each value. In accordance with Ball-Rokeach and Loges (1996), ipsative measures imply the real-world notion that values are often in competition with one another. Future studies could include absolute and ipsative measures in analyzing and interpreting data of values in order to assess the cultural aspects of a military institution.

Concluding remarks

This study used a novel approach in military psychology to examine values in a military organization. The identification of the descriptive terms of military values by means of a psycholexical-oriented approach and the assessment of the underlying military value factors through factor analysis set the stage to empirically assess the military culture of the SAF. The empirical outcome of five military value factors provided a foundation for developing a catalog of core military values. Different representative military samples across varying hierarchical levels were included (i.e., high-executive military leaders and military professionals). Accordingly, this study design allows comparison of value congruency between the different organizational levels. Good congruence could serve as an indicator for a common and consistent core value base. However, the question arises as to how these military values can be made tangible and experienced in everyday life. It has been generally suggested that selection instruments and training should be aligned with the core values, as it is military leaders who ultimately have to credibly convey the values to the subordinates (Kernic & Annen, 2016). The challenge is for each military organization to foster the best fit between personal values and the value culture of the organization. The present findings will further assist optimization of the selection and training programs for Swiss soldiers at all hierarchical levels.

Notes

1. In Switzerland, career officers and career NCOs are full-time military employees; they are responsible for conveying military values to soldiers, who are required to complete basic military service and additional training according to the conscript army system.
2. Data analysis was conducted with and without excluded data cases; only minor differences in results were observed.

3. We tested skipping these items for exploration of factor structure, with the outcome that no substantial differences in factorial structure occurred. Accordingly, items were not excluded for results reported.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability

The data that support the findings of this study are available from the corresponding author, [N.E.], upon reasonable request.

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