

## Article

# The Volunteer Motivation Scale (VMS): Adaptation and Psychometric Properties among a Portuguese Sample of Volunteers

Cátia Martins <sup>1,2,\*</sup> , Saul Jesus <sup>2,3</sup>, José Tomás da Silva <sup>4</sup>, Conceição Ribeiro <sup>5,6</sup> , Maria Dulce Estêvão <sup>7</sup> , Helena Mocho <sup>1,2</sup>, Elias Ratinho <sup>1,2</sup>  and Cristina Nunes <sup>1,2</sup> 

<sup>1</sup> Psychology Research Centre (CIP), 1169-023 Lisboa, Portugal; hsalcaparra@ualg.pt (H.M.); a54321@ualg.pt (E.R.); csunes@ualg.pt (C.N.)

<sup>2</sup> Faculty of Human and Social Sciences, University of Algarve, Campus of Gambelas, 8005-139 Faro, Portugal; snjesus@ualg.pt

<sup>3</sup> Research Centre for Tourism, Sustainability and Well-Being (CinTurs), University of Algarve, Campus of Gambelas, 8005-139 Faro, Portugal

<sup>4</sup> Centre for Social Studies, Faculty of Psychology and Educational Sciences, University of Coimbra, 3000-995 Coimbra, Portugal; jtsilva@fpce.uc.pt

<sup>5</sup> Centre of Statistics and its Applications (CEAUL), Faculty of Sciences, University of Lisboa, 1749-016 Lisboa, Portugal; cribeiro@ualg.pt

<sup>6</sup> Institute of Engineering, University of Algarve, Campus da Penha, 8005-139 Faro, Portugal

<sup>7</sup> School of Health, University of Algarve, Campus of Gambelas, 8005-139 Faro, Portugal; mestevao@ualg.pt

\* Correspondence: csmartins@ualg.pt

**Abstract:** Using self-determination theory, this study examined the autonomous motivation and regulatory styles of volunteers. The Volunteer Motivation Scale (VMS) is one of the main instruments available to assess these constructs, but it requires validation and adaptation for different contexts. Therefore, the goal of this study was to analyze the psychometric properties of the 12-item VMS in a sample of Portuguese volunteers. The sample consisted of 207 volunteers, mostly women (74.4%), aged from 14 to 81 years, from various areas of volunteering. The measures included self-regulation, basic psychological needs, causality orientation, and autonomy support. Confirmatory factor analysis using the *lavaan* package in R was performed to test a four-factor model and a two-factor model. The results indicated that the four-factor model had a better fit to the data. The VMS showed good internal consistency, discriminant validity, and convergent validity. The VMS can be viewed as a valuable tool for professionals and a promising avenue for future research on the motivations of volunteers.

**Keywords:** motivation to volunteer; volunteering; self-determination theory; autonomous motivation



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## 1. Introduction

Volunteerism is an important topic of research, as it involves unpaid assistance that supports various sectors of society (e.g., communities, organizations) [1,2] and contributes to solving social and environmental problems [3]. The United Nations' Sustainable Development Goals (SDG) (2015) have recognized and promoted the participation of community members and the involvement of stakeholders and organizations in this regard [4].

Volunteering is characterized by non-mandatory, pro-social, and long-term behavior that does not seek monetary rewards, benefits strangers, and takes place in an organizational context [5–9]. Since volunteering does not entail any personal material benefits, non-profit organizations face the challenge of motivating and engaging volunteers in their activities [10] and increasing their retention [7]. This challenge has motivated researchers and practitioners to explore the role of connections and digital tools in fostering volunteer engagement and commitment [2,3].

Motivation is a key factor in volunteerism, and several theories have addressed it as a relevant construct [5,6,8,10,11]. One of the most influential approaches is Functional Theory [5,8,12], which identifies six functions that underlie the reasons for volunteering. According to this theory, volunteering can serve multiple functions for a person, and different activities can satisfy the same function [13]. This theory also distinguishes between altruistic and egoistic motives for volunteering. Despite its simplicity [14], some studies have shown that this theory can provide useful insights into the different relationships that lead to satisfying and sustained volunteering [15].

However, this theory does not explain the intra-psychological mechanisms that account for why some motivations are more strongly associated with higher levels of engagement than others [16]. Moreover, the theory conceptualizes motivation in a quantitative rather than a qualitative way [15,16]. In recent years, more studies have adopted self-determination theory as a framework for the study of volunteerism [10,17–22].

### 1.1. Self-Determination Theory

Self-determination theory (SDT) [23–25] proposes that humans have an inherent and positive drive to grow and to integrate this drive in the self. Motivation, according to SDT, can be classified into two types: extrinsic and intrinsic. These types differ in the level of self-determination they entail, with higher autonomy implying higher self-determination. Self-determined motivational experiences (e.g., those that involve novelty, congruence, and personal relevance) are associated with optimal motivation and more positive outcomes in psychological, developmental, and behavioral domains [26].

Intrinsic or autonomous motivation represents the innate and organismic tendency of people to be self-determined and autonomous, thus showing curiosity toward interacting actively with the environment [27,28]. When they are autonomously motivated, they experience feelings of excitement, interest, and pleasure [24,28], as well as a sense of participation in determining the content of life, i.e., a feeling of flow [29]. When encountering this emotional state, people experience various positive emotions and a deep sense of well-being [27,30–33].

Extrinsic motivation refers to a non-self-determined behavior that is driven by external rewards or punishments. There are four types of extrinsic motivation, which differ in their degree of self-determination: external, introjected, identified, and integrated. External motivation reflects the most externalized form of regulation, where the behavior is controlled by external contingencies, and the locus of causality is perceived as external. Introjected motivation involves internalizing the external regulation but not accepting it as one's own, thus still implying a sense of external control. Identified motivation involves a conscious valuation of the behavior or regulation and represents a more self-determined form of extrinsic motivation. Integrated motivation occurs when the identified regulation is congruent with one's personal values, goals, and needs [24,28].

Amotivation, on the other hand, denotes a lack of intention to act, resulting from a perceived absence of value, competence, or expected outcomes for the activity [24,28].

These regulatory styles (ranging from intrinsic to amotivation) vary in the degree of internalization (i.e., the process of assimilating patterns, values, or practices that are deemed relevant by the social group and that the individual accepts or adopts as his/her own) [23]. Internalization is a continuum that reflects the individual's orientation toward the regulation. Thus, the individual does not progress through stages of internalization but rather adopts a specific regulatory style depending on his/her previous experiences and situational factors. This style may change at any time depending on the motives for engagement and the interaction with the context [25,28].

Ryan and Deci [25] propose that internalization, the process of integrating external regulations into one's sense of self, depends on the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. These needs are essential for human growth and well-being. Autonomy and competence are also key factors in intrinsic motivation, which is the inherent tendency to seek out novelty and challenges. However, intrinsic

motivation is not the only type of motivation that can regulate behavior. Behavior can also be regulated by different degrees of autonomy, from self-determined to externally controlled [23–34]. Thus, the quality of motivation is more important than the quantity [23,28].

According to SDT, causality orientation is an individual difference that reflects how people initiate and regulate their behavior, as well as the aspects of the environment that they attend to when doing so [23,35]. SDT distinguishes three types of causality orientation: autonomous, controlled, and impersonal. These orientations vary in the degree of autonomy, which is the extent to which people experience their actions as originating from the self rather than being imposed on the self [34]. Controlled orientation corresponds to external and introjected regulation, while autonomous orientation corresponds to identified, integrated, and intrinsic regulation [17,33]. Deci and Ryan [23,24] suggested that causality orientation is relevant to understanding the nature and outcomes of behavior and that it accounts for a significant portion of the variance in people's behavior and affect. SDT also considers causality orientation as a secondary antecedent of motivation, in addition to the social context [36].

Volunteering is a prosocial behavior that can be understood from the perspective of self-determination theory (SDT). One of the pioneer studies in this field was conducted by Gagné [37], who investigated the role of these variables in the work of volunteers at an animal shelter organization. She found that autonomy orientation, which reflects the general tendency to act autonomously, was not related to the amount of time that volunteers devoted to their work, but it was positively associated with the quality of their psychological engagement. She also reported that volunteers who perceived more autonomy support from their supervisors and co-workers experienced higher levels of need satisfaction and well-being [37]. These findings suggest that volunteering is a self-determined behavior that depends on both personal and contextual factors and that the number of hours spent on volunteering may not be a good indicator of the motivation and dedication of volunteers. Gagné [37] argued that more research is needed to explore the process of internalization and self-regulation in volunteering and how it relates to the functional motives that underlie this behavior [20]. This approach could provide a more comprehensive understanding of volunteers' motivations and outcomes [16]. Since then, several studies have been reported [17–22], but the ongoing research is still scarce, especially in the Portuguese context.

### *1.2. Measuring Volunteer Motivation with the SDT*

Volunteer motivation is a key factor in understanding and promoting volunteer engagement and retention. Several instruments have been developed to measure volunteer motivation, such as the Volunteer Function Inventory (VFI) [8,16] and the Volunteer Motivation Inventory (VMI) [38]. The VFI is the most used instrument. It is based on the Functionalist Approach, which assumes that people volunteer for different reasons that serve different psychological functions (e.g., social, values, career) [8]. However, the VFI does not capture the degree of self-determination of volunteer behavior, which is the main focus of self-determination theory (SDT) [22,28]. According to SDT, motivation can be classified into four types, external regulation, introjected regulation, identified regulation, and intrinsic regulation, which vary in the extent to which they are autonomous or controlled. Millette and Gagné [10] applied SDT to the volunteering domain and developed a Volunteer Motivation Scale (VMS) to assess the four types of motivation. The VMS consists of 12 items that answer the question "Why did you volunteer in the last 6 months?" The items are grouped into four subscales (three items each) that correspond to the four types of motivation. The subscales showed acceptable internal reliability, with values between 0.81 (introjection regulation) and 0.42 (external regulation). The results also indicated that volunteers had higher levels of intrinsic and identified regulation than introjected and external regulation, suggesting a more autonomous motivation pattern.

Self-determination theory (SDT) has been used in various studies on volunteer motivation, using the Volunteer Motivation Scale (VMS) as a measurement tool. The VMS

was originally developed by Millette and Gagné [10] and has been adapted to different languages and contexts, such as Chinese [20], Italian [21,39] Scottish [40], and Australian [41]. The Italian version of the VMS, validated by Meneghini [39], was used by Nencini et al. [21] to examine the relationship between motivational regulation, organizational climate, and intention to leave among 247 volunteers, mostly female ( $f = 135$ ), with an age range of 20 to 82 years ( $M = 52.2$ ,  $SD = 18.0$ ). The results showed acceptable internal consistency for the VMS subscales, ranging from 0.67 (introjected regulation) to 0.81 (external regulation). The volunteers presented high levels of satisfaction and autonomous motivation, which were positively correlated, while the intention to leave was linked to external regulation. Moreover, autonomous, and controlled motivation were significant predictors of volunteers' satisfaction and retention.

The VMS-C is a Chinese version of the Volunteer Motivation Scale (VMS) that was developed by Li, Wu, and Kee [20]. They adapted the scale from the Revised Sport Motivation Scale [42], which includes six types of regulations, including integrated and amotivation subscales. They also used items from the Motivation at Work Scale [43] to measure the different types of motivation for volunteering. The VMS-C consists of eighteen items, with three items for each subscale. The authors examined the relationship between motivation, a supportive work climate, and intention to remain as a volunteer using a population of 362 undergraduate students, mainly female ( $n = 238$ ). They hypothesized that a supportive work climate would be positively related to autonomous motivation and negatively related to controlled motivation and that intention to stay would be positively correlated with autonomous motivation and negatively correlated with controlled motivation. They tested two models: a first-order six-factor model and a first-order five-factor model. The six-factor model showed an adequate fit, but there was a lack of discriminant validity between the integrated and intrinsic regulations. Therefore, the authors decided to drop the integrated regulation subscale and test the five-factor model. The five-factor model showed a marginal good fit, with item-factor loadings ranging from 0.49 to 0.94. The internal reliability of the subscales was acceptable, with Cronbach's alpha values between 0.73 (amotivation) and 0.83 (identified regulation). The participants reported medium-high levels of intrinsic and identified regulations and low levels of introjected external regulations and amotivation. The subscales followed a quasi-simplex pattern, with intrinsic and identified regulations correlating more strongly between themselves than to introjected regulation. Thus, the autonomous vs. controlled dichotomy seemed to also be functional. The authors also intended to test the group invariance of the scale across gender and age groups, but the sample size was insufficient for this purpose [20]. Only one study has tested the measurement invariance of the VMS and found no significant differences between genders [42].

According to SDT, work motivation can be assessed by four types of regulations: external, introjected, identified, and intrinsic. Gagné et al. [43,44] developed the Motivation at Work Scale (MAWS), a scale that measures these four regulations, excluding amotivation and integrated regulation, which are difficult to psychometrically distinguish from identification [43,45]. The MAWS is like the VMS in its internal structure, as it was initially composed of 20 items but then reduced to 12 items after a psychometric analysis. In the Portuguese context, there is a lack of instruments to evaluate self-determination in volunteering, as only a version of the VFI has been translated and adapted [46,47].

### 1.3. Other Constructs Related to Volunteer Motivation

The VMS is a tool that aims to measure the motivation of volunteers, especially their self-determination or the quality of their motivation according to SDT. Previous studies have found positive associations between intrinsic or autonomous motivation and the satisfaction of volunteers' basic psychological needs, their causality orientation, and support for their autonomy [19,22,43,44].

For instance, Haivas et al. [19] examined the sequential effects of autonomy-supportive environments, the influence of the social network dimension on the fulfillment of needs, and the levels of autonomous and controlled motivation among Eastern European (i.e., Romanian)

volunteers. Their sample consisted of 349 Romanian volunteers, aged from 18 to 58 years ( $M = 22.9$ ;  $SD = 4.8$ ), with a predominance of women (61.3%). They determined the subjects' controlled motivation (i.e., the sum of the external and introjected regulation subscales) and autonomous motivation (i.e., the combination of the integrated and intrinsic regulation subscales). They observed that the volunteers reported higher levels of psychological needs satisfaction and autonomy support. Both autonomy motivation and support were positively related but mediated by the satisfaction of needs (i.e., competence and autonomy). The same pattern was observed for controlled motivation, which was also mediated by the satisfaction of the autonomy need. Only the autonomy need was negatively related to controlled motivation. No significant correlation was detected with the relatedness need.

Oostlander et al. [22] analyzed how autonomy-supportive leadership and individual differences among volunteers influence their motivation. They reported positive associations between autonomy support and autonomous orientation, autonomous motivation, and the four types of self-regulation, with stronger correlations for more internalized regulations. They also observed that autonomy orientation was positively related to autonomous motivation and intrinsic and identified regulations, while controlled orientation was positively related to controlled motivation and external and introjected regulations. The levels of autonomous and controlled motivation were higher than the orientation levels.

Previous studies have examined the relationship between autonomy support climate and different types of motivation among volunteers. Li, Wu, and Kee [20] reported that autonomy support climate was positively associated with intrinsic and identified regulations and negatively associated with introjected regulation and amotivation. External regulation was not related to autonomy support climate. Similarly, Allen and Bartle [40] found that autonomy support was positively correlated with identified regulation but not with other types of motivation. Moreover, they also found that autonomous motivation was positively linked to volunteer satisfaction [40] and intention to remain [20,40], indicating that an autonomy support climate can enhance volunteers' well-being and commitment.

The Volunteer Motivation Scale (VMS) is a widely used instrument to assess the quality of motivation underlying volunteer engagement and retention, based on the self-determination theory (SDT) framework, which distinguishes between autonomous and controlled types of motivation. The VMS has been translated into several languages and has shown a consistent four-factor structure, corresponding to intrinsic motivation, identified regulation, introjected regulation, and external regulation. However, some psychometric issues have been reported, such as low internal consistency and factor loadings. Moreover, the VMS has a relatively large number of items (24), which may limit its applicability in some contexts. Therefore, there is a need for a short and valid measure of volunteer motivation that is aligned with the SDT model.

Within this context, the objective of this study was to examine the psychometric properties of the VMS in a sample of Portuguese volunteers. Specifically, we intend to (1) test the original four-factor structure and the alternative two-factor structure (autonomous vs. controlled motivation) of the VMS using confirmatory factor analysis (CFA); (2) evaluate the internal consistency of the VMS subscales; and (3) assess the convergent validity of the VMS with other SDT-related constructs, such as basic psychological needs, autonomy support, and causality orientations.

## 2. Materials and Methods

### 2.1. Sample

The study sample consisted of 207 volunteers who completed the provided questionnaires. Of these, 154 (74.4%) were female, with ages ranging from 13 to 81 years (mean = 33.05 years, standard deviation (SD) = 15.21 years). The average duration of volunteer work was 40.76 months ( $SD = 51.07$ , range = 1 to 300 months), primarily on a weekly basis (49.7%). The volunteers were involved in different areas of service, such as social (65.8%), health (15.1%), and education (13.7%).



## 2.2. Instruments

The Volunteer Motivation Scale (VMS) [10] was translated and adapted for the present study. This questionnaire is a 12-item questionnaire that assesses 4 types of motivational regulation (subscales) with 3 items each: external regulation (e.g., “So other people would approve of me”), introjected regulation (e.g., “Because I would really feel bad about myself if I didn’t”), identified regulation (e.g., “Because volunteering has become a fundamental part of who I am”), and intrinsic regulation (e.g., “Because it is fun”). The items are rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree), considering the question “Why have you volunteered in the last 6 months?”. Higher values in each subscale indicate higher levels of the respective type of regulation.

The Basic Psychological Needs Satisfaction (BPNS) Scale [48], adapted for the Portuguese language [49], was employed to assess the satisfaction of basic psychological needs among volunteers. The 19-item BPNS measures three fundamental needs that were contextualized for “volunteering activities” and “work as a volunteer”. These three basic psychological needs assessed were competence (6 items; e.g., “Often, I do not feel very competent in my volunteering”;  $\alpha = 0.62$ ), autonomy (5 items; e.g., “I am free to express my ideas and opinions where I volunteer”;  $\alpha = 0.60$ ), and relationships (8 items; e.g., “I really like the people I interact with in my volunteering”;  $\alpha = 0.74$ ). Participants rated each item on a 7-point Likert scale ranging from 1 (not at all true) to 7 (very true), with higher scores indicating greater satisfaction in the corresponding psychological need.

The General Causality Orientation Scale (GCOS), which was developed by [23] and adapted to Portuguese by [50], was used to assess autonomy orientation. The GCOS consists of 12 vignettes, each describing a situation in a typical social or achievement context, with three possible response types (3 subscales; a total of 36 items). The responses reflect an autonomous orientation (e.g., “I wonder if the new work will be interesting”;  $\alpha = 0.70$ ), a controlled orientation (e.g., “Will I make more at this position?”;  $\alpha = 0.71$ ), or an impersonal orientation (e.g., “What if I can’t live up to the new responsibility?”;  $\alpha = 0.78$ ). For each situation, participants indicated their degree of agreement on a 7-point Likert-type scale (1 = very unlikely, 7 = very likely) as to whether each response was typical for them. Higher scores on each subscale indicate higher levels of the corresponding orientation.

The Work Climate Questionnaire (WCQ [35]; Portuguese version by [47]) was used to assess the level of autonomy perceived by the individual toward the volunteer coordinator. The WCQ consists of 15 items and was adapted for the present study to refer to a volunteering setting and volunteering coordinators. The participants rated a set of statements (e.g., “I am able to open up to my coordinator at volunteering work”;  $\alpha = 0.94$ ) on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Higher levels indicate higher autonomy support.

A sociodemographic questionnaire was administered to gather data on the participants’ gender, age, profession, and volunteering-related factors, including the organization, area of involvement, and duration of volunteering experience.

## 2.3. Procedures

Approval for this study was granted by the Scientific Commission of the Psychology and Sciences Education Department, University of Algarve, Reference No 59/14.02.2007.

The process involved translating and adapting the VMS to the Portuguese context following a back-translation process [51] with the permission of the original authors. Data were collected from volunteers at organizations such as the Food Bank and the Portuguese Red Cross. The approach used was a snowball sampling technique involving students from the Psychology Department of the University of (blinded for review). Participants were invited to join the study and tasked with recruiting five volunteers each to complete the questionnaires. Throughout the recruitment phase, participants were briefed on the study’s objectives, its non-compensatory nature, the assurance of anonymity, the confidentiality of their responses, and the right to withdraw from the study at any time without facing any repercussions.

#### 2.4. Data Analysis

The analysis of data was conducted using IBM SPSS 28.0.1.0 (IBM Corp., Chicago, IL, USA), *R* version 4.2.0, and the *lavaan* (Latent Variable Analysis) package (v0.6-7) [52–54]. Descriptive statistics were computed, including means, standard deviations, kurtosis, and skewness. Absolute skewness values greater than 3 and kurtosis values exceeding 10 were considered severe violations of the normality assumption. To assess multivariate normality, Mardia's expected kurtosis,  $p(p + 2)$ , was employed, where  $p$  represents the number of observed variables, as the influence of multivariate skewness in confirmatory factor analysis (CFA) is not considered problematic [52,55]. The factorial structure of the Portuguese version of the VMS was evaluated using CFA [56–58].

The selection of an estimation method, whether it be maximum likelihood (ML) or generalized minimum squares (GMS), has the potential to impact the accuracy of fit indices and parameter estimates. ML is a widely used method but requires the assumption of continuous and multivariate normal distribution in the observed data. When the observed variables deviate from normality (because of skewness, kurtosis, or heavy tails), the standard errors and chi-square statistics need to be adjusted to improve the robustness against non-normality [55]. Therefore, we used the diagonally weighted least squares (DWLS) estimation method, which is suitable for non-normal data, in the *lavaan* package of *R*.

We examined the model's goodness of fit using various indices, including the chi-square statistic divided by the degrees of freedom ( $\chi^2/df$ ), the comparative fit index (CFI), the goodness of fit index (GFI), the incremental fit index (IFI), the Tucker–Lewis fit index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). For a good fit, we looked for a  $\chi^2/df$  ratio below 2 and an RMSEA value equal to or less than 0.05. Additionally, a very good fit was indicated by CFI, GFI, IFI, and TLI values exceeding 0.95. and SRMR values equal to or lower than 0.08 as indicators of acceptable fit. We also examined the standardized factor loadings of the items and retained those higher than 0.40. In evaluating the discriminant validity of the factors, we computed the average variance extracted (AVE) considering values equal to or higher than 0.5 as acceptable [53]. To gauge the internal consistency of the factors, we utilized Cronbach's alpha, composite reliability (CR), average inter-item correlations, mean inter-item correlation (MIIC), and the range of corrected item-total correlation (CITCR). For Cronbach's alpha, values above 0.70 were deemed adequate, and those surpassing 0.90 were considered excellent. We eliminated the factors with Cronbach's alpha values below 0.50. We also accepted CR values above 0.7, MIIC values above 0.3, and CITCR values above 0.3 as indicators of proper reliability.

To examine the associations between VMS and SDT scales, we used Pearson's correlation coefficients and reported their signs, scores, and  $p$ -values.

### 3. Results

#### 3.1. Descriptive Analysis

The mean values of the VMS items ranged from 1.60 (item 1,  $SD = 1.25$ ) to 5.66 (item 7,  $SD = 1.56$ ), indicating variability in responses to the various items. This was also reflected by the high standard deviations, which were above one for all items. Responses ranged from a minimum of 1 to a maximum of 7, with all items registering the full range of the response scale (Table 1).

Univariate skewness values ranged from  $-1.42$  to  $2.77$ , and univariate kurtosis values ranged from  $-1.42$  to  $7.61$ , as shown in Table 1. Univariate skewness coefficients were negative for some items and positive for others, with all values less than three in absolute value. Kurtosis values were generally positive and less than 10 in absolute value. While univariate normality assumptions were not severely violated, multivariate normality assumptions were not met, necessitating the use of DWLS as the estimation method.

Table 1 shows the univariate and multivariate skewness and kurtosis values for the VMS items. The univariate skewness values were both negative and positive, but none of them exceeded the absolute value of three, which is considered a threshold for normality.

The univariate kurtosis values were mostly positive, but none of them exceeded the absolute value of 10, which is another criterion for normality. Therefore, the univariate normality assumption was not severely violated. However, the multivariate skewness and kurtosis values were 46.02 and 207.24, respectively, which indicated a departure from multivariate normality. Thus, the DWLS estimation method was used for the analysis.

**Table 1.** Descriptive statistics of VMS items.

VMS Items	<i>M</i>	<i>SD</i>	<i>S</i>	<i>K</i>
Item 1	1.60	1.25	2.77	7.61
Item 2	1.84	1.51	2.08	3.42
Item 3	1.66	1.34	2.47	5.54
Item 4	3.10	2.23	0.57	−1.21
Item 5	2.99	2.13	0.68	−1.03
Item 6	4.36	2.21	−0.28	−1.42
Item 7	5.66	1.56	−1.19	0.64
Item 8	5.57	1.65	−1.09	0.09
Item 9	5.44	1.74	−1.07	0.13
Item 10	4.91	1.94	−0.76	−0.60
Item 11	5.42	1.75	−1.42	0.27
Item 12	5.63	1.71	−1.25	0.58
Multivariate			46.02	207.24

*M* = mean; *SD* = standard deviation; *S* = skewness; *K* = kurtosis.

### 3.2. Internal Structure Analysis

Several fit indices were used to evaluate the adequacy of the four-factor structural model. The results (Table 2) showed that the model had a good fit to the data, as indicated by the following criteria:  $\chi^2(48) = 66.89$ ;  $\chi^2/df = 1.44$ ; CFI = 0.97; TLI = 0.98; RMSEA = 0.044; 90% CI [0.011–0.067]. The chi-square-statistic-to-degrees-of-freedom ratio was less than five, indicating an acceptable model fit. Additionally, the CFI and TLI values exceeded the recommended criterion (>0.90) for a good fit, and the RMSEA value fell within the acceptable range. Similarly, the SRMR value supported adequate model fit. The two-factor model revealed less adequate values (Table 2).

**Table 2.** Goodness of fit indices for the VMS model tested with CFA.

Indices	$\chi^2/df$	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR
Four-Factor Model	1.44	0.99	0.98	0.04	0.01–0.07	0.07
Two-Factor Model	2.29	0.95	0.93	0.08	0.06–0.10	0.12

$\chi^2/df$  = chi-square/degree of freedom; CFI = comparative fit index; TLI = Tucker–Lewis fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

All estimated factor loadings exceeded the recommended cutoff point of 0.50, demonstrating proper individual reliability values ( $R^2 \geq 0.25$ ) and further supporting factorial validity (Table 3).

**Table 3.** Loadings of the VMS tested with CFA.

Factors	Items	Unstandardized	St. Error	<i>z</i> -Value	<i>p</i> (>  <i>z</i>  )	Standardized
F1	Item 1	1.00				0.70
	Item 2	1.50	0.28	5.33	0.00	0.86
	Item 3	1.07	0.22	4.94	0.00	0.69
F2	Item 4	1.00				0.65
	Item 5	0.87	0.09	9.94	0.00	0.60
	Item 6	1.20	0.12	10.32	0.00	0.79



Table 3. Cont.

Factors	Items	Unstandardized	St. Error	z-Value	$p (>  z )$	Standardized
F3	Item 7	1.00				0.81
	Item 8	1.07	0.10	10.80	0.00	0.82
	Item 9	1.15	0.11	10.76	0.00	0.83
F4	Item 10	1.00				0.70
	Item 11	1.10	0.11	10.03	0.00	0.86
	Item 12	1.07	0.11	9.94	0.00	0.86

St. Error = standard deviation error; z-value = Wald statistics;  $p(> |z|) = p$ -value.

The results denote adequate convergent validity (Table 4), as the average variance extracted (AVE) values are all above 0.5, except for factor 2. However, according to Fornell and Larcker [59], the AVE value is still acceptable given that it is less than 0.5, but the composite reliability (CR) is greater than 0.6. Moreover, the correlations between factors ranged from 0.10 to 0.77. The AVE values also support discriminant validity as their squared values were greater than or equal to the squared values of the correlations between factors.

Table 4. VMS factor correlation matrix and average variance extracted.

Factor	AVE	Correlation Matrix			
		F1	F2	F3	F4
F1	0.59	1			
F2	0.47	0.44	1		
F3	0.67	0.10	0.61	1	
F4	0.64	0.20	0.51	0.77	1

AVE = Average variance extracted.

Figure 1 depicts the VMS structural model as determined by the CFA. Factor 1 represents external regulation, factor 2 represents introjected regulation, factor 3 represents identified regulation, and factor 4 represents intrinsic regulation.

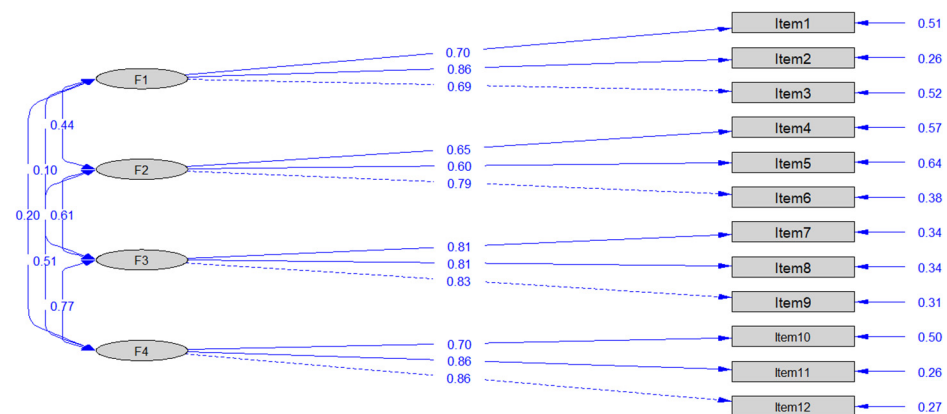


Figure 1. CFA model results.

### 3.3. VMS Internal Consistency

The internal consistency of the scale was evaluated using Cronbach’s alpha and composite reliability (CR). Cronbach’s alpha scores ranged from 0.74 to 0.86, indicating good internal consistency. All CR values were greater than 0.7, further demonstrating the reliability of the factors. Additionally, the average inter-item correlations were relatively high, ranging from 0.48 to 0.68 (Table 5).

**Table 5.** Cronbach's alphas, mean inter-item correlations, and corrected item–total correlation ranges.

VMS Subscales	Alpha	CR	MIIC	CITCR
External Regulation	0.79	0.81	0.56	0.57–0.74
Introjected Regulation	0.74	0.71	0.48	0.47–0.65
Identified Regulation	0.86	0.85	0.68	0.63–0.85
Intrinsic Regulation	0.84	0.85	0.65	0.61–0.81

Alpha = Cronbach's alpha; CR = composite reliability; MIIC = mean inter-item correlation; CITCR = corrected item–total correlation range.

### 3.4. VMS Convergent Validity

We determined the means of the external and introjected regulation subscales to obtain the controlled motivation score and the means of the identified and intrinsic regulation subscales to obtain the autonomous motivation score. Table 6 shows the correlations between these motivation scores and the other variables. Controlled motivation was positively and significantly correlated with controlled orientation ( $r = 0.25, p < 0.05$ ) and introjected regulation ( $r = 0.30, p < 0.05$ ). Identified regulation was positively correlated with competence and autonomy needs satisfaction ( $r = 0.18, p < 0.01$ ;  $r = 0.17, p < 0.01$ ), autonomous orientation ( $r = 0.26, p < 0.01$ ), and autonomy support ( $r = 0.40, p < 0.01$ ). Intrinsic regulation was positively and significantly correlated with all psychological needs (competence:  $r = 0.23, p < 0.01$ ; autonomy:  $r = 0.23, p < 0.01$ ; relatedness:  $r = 0.17, p < 0.05$ ), autonomous and controlled orientation ( $r = 0.17, p < 0.05$ ;  $r = 0.20, p < 0.05$ ), and autonomy support ( $r = 0.46, p < 0.01$ ).

**Table 6.** Correlations between VMS, basic psychological needs satisfaction, causality orientations, and autonomy support.

Variables/Regulations	External	Introjected	Identified	Intrinsic	Autonomous Motivation	Controlled Motivation
Competence needs	−0.09	0.02	0.18*	0.23 **	0.23 **	−0.04
Autonomy needs	−0.11	−0.06	0.17 *	0.23 **	0.23 **	−0.10
Relatedness needs	−0.09	0.01	0.15	0.17 *	0.18 *	−0.04
Autonomous orientation	−0.02	0.12	0.26 **	0.17 *	0.25 **	0.08
Controlled orientation	0.25 **	0.30 **	0.07	0.20 *	0.15	0.35 **
Impersonal orientation	0.17	0.13	−0.09	−0.02	−0.07	0.17
Autonomy support	−0.01	0.21 **	0.40 **	0.46 **	0.48 **	0.14 *

\*  $p < 0.01$ ; \*\*  $p < 0.05$ .

Autonomous motivation, calculated as the mean of the identified and intrinsic regulation subscales, was positively and significantly correlated with all three psychological needs (competence:  $r = 0.23, p < 0.01$ ; autonomy:  $r = 0.23, p < 0.01$ ; relatedness:  $r = 0.18, p < 0.05$ ), autonomous orientation ( $r = 0.25, p < 0.01$ ), and autonomy support ( $r = 0.48, p < 0.01$ ). Controlled motivation was positively correlated with controlled orientation ( $r = 0.35, p < 0.01$ ) and autonomy support ( $r = 0.14, p < 0.05$ ).

## 4. Discussion

Volunteer motivation is a key concept in many models that examine how volunteers engage and persist in their activities. Therefore, it is essential for practitioners (e.g., managers, psychologists) and researchers to assess this construct with reliable and valid tools. Several instruments have been developed for this purpose, such as the Volunteer Function Inventory (VFI) [8,12], but they differ in their focus, such as the quantitative or qualitative nature of volunteer motivation, depending on the theoretical framework they are based on. Recently, self-determination theory (SDT) has gained increasing attention as a more qualitative approach to assessing volunteer motivation [16]. In Portugal, the VFI has been

translated and adapted [46,47], but there is still a need for instruments that capture the self-determined aspects of volunteer behavior.

Millette and Gagné [10] developed the Volunteer Motivation Scale (VMS), a 12-item instrument that measures four types of motivation: external, introjected, identified, and intrinsic. These types range from more controlled motivation (external and introjected) to more self-determined and autonomous motivation (identified and intrinsic). Because the VMS was the first instrument of its kind and has been successfully adapted to other languages and cultures [19,20,39,43,44], we chose to use the original version [10]. After translating and adapting the VMS for Portuguese, we analyzed its psychometric properties, focusing on its internal factor structure, internal consistency, and construct validity.

An initial assessment of the items' characteristics revealed a wide distribution, with all items spanning the entire range of the scale. To assess the normality of the data, kurtosis and skewness values were examined. The results suggested that the univariate normality assumption was not severely violated, but the multivariate normality assumption was not supported. To accommodate the non-normal characteristics of the items and the sample size, the diagonally weighted least squares (DWLS) estimation method in the *lavaan* (latent variable analysis) package for R was employed. Generally, the sample size has a comparatively smaller effect on model parameter bias but a more substantial impact on parameter standard errors. Since our study's sample size was at the lower limit considered acceptable for confirmatory factor analysis (CFA) (i.e., 200) [60,61], future studies should aim for larger sample sizes to enhance standard error estimates.

Based on previous research [10,20], two-factor (autonomous and controlled motivation) and four-factor (four-regulation) models of the VMS were tested in this study. The four-factor model showed a good fit to the data, with all items loading above 0.60 on their respective factors, indicating convergent validity. The factors also demonstrated discriminant validity and internal consistency. Overall, these findings suggest that the 12-item solution meets the fundamental psychometric criteria and that the VMS is a suitable tool for assessing volunteers' regulatory styles. Despite the inclusion of different items in their respective instruments, other researchers have reported similar results, consistently upholding the four-factor structure [17,21,22]. While some studies have explored a two-factor model, the results consistently indicate that the four-factor model provides superior fit indices.

In line with expectations, the findings demonstrate positive correlations between less autonomous forms of motivation (external and introjected regulation) and controlled orientation, as well as between autonomous forms of motivation (identified and intrinsic regulation) and autonomous orientation. Additionally, the results indicate that more autonomous motivation is positively associated with the satisfaction of the three basic psychological needs, especially competence and autonomy, with intrinsic regulation showing the strongest correlations [19,20,22,43–45]. The results also support the notion that autonomy support is positively and progressively related to the degree of autonomy reflected by the motivational regulations [16,20,22].

Assessing volunteers' motivation is crucial for both professionals and researchers, as it can help them to understand and enhance the quality of volunteers' engagement and volition [62]. This can also promote volunteers' satisfaction and well-being and increase their retention as valuable contributors to the community [10]. By using VMS, professionals can monitor the types of motivation that drive volunteers and adjust the tasks and context features to optimize their qualitative engagement. In the Portuguese scenario, professionals and researchers do not have access to many instruments for assessing volunteer motivation (only a version of the VFI has been translated and adapted) [46,47] and, to the best of our knowledge, there are none that use SDT. Therefore, this work can constitute a relevant resource for the Portuguese volunteering field, considering its theoretical background and size (i.e., 12 items).

Despite the promising findings of the current study, it has some limitations that need to be addressed in future research. First, the sample size was small and not representative

of the general population, which limits the generalizability of the findings. Second, to enhance construct validity, the cross-validation of the VMS with other established measures of intrinsic motivation and aspirations is recommended. Therefore, it is recommended that future studies use larger and more diverse samples to validate the instrument. Additionally, assessing the temporal stability of the VMS using test–retest procedures would further strengthen its validity. Furthermore, the measurement invariance of the VMS across gender groups could not be examined given the insufficient sample size of each group.

## 5. Conclusions

As the role of volunteering in modern society has expanded and gained recognition [4], fostering meaningful engagement requires the promotion of high-quality forms of motivation and the development of tools for assessment and monitoring.

This study intended to evaluate the adaptation and validity of the Volunteer Motivation Scale (VMS) [10], a tool designed to assess volunteers' autonomy continuum (i.e., four regulatory styles), enabling their classification based on their level of autonomous (or more controlled) motivation.

The findings demonstrate that the VMS exhibits favorable psychometric properties (i.e., internal structure, validity, and consistency) and can be effectively employed for assessing volunteers' motivation. Thus, we conclude that the VMS proved to be a satisfactory instrument that can serve as a relevant resource for practitioners and researchers in the field of volunteering, especially in the Portuguese context.

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