



Krzysztof Kwapis

<https://orcid.org/0000-0002-0359-6386>
Akademia Ignatianum w Krakowie
Jesuit University Ignatianum in Krakow
krzysztof.kwapis@ignatianum.edu.pl

Anna Maria Batory-Ginda

<https://orcid.org/0000-0002-5308-3538>
Uniwersytet Rzeszowski
University of Rzeszów
anna.m.batory@gmail.com
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Psychometric Properties of the Polish Version of the Passion Scale ***Właściwości psychometryczne polskiej wersji skali pasji***

ABSTRACT

RESEARCH OBJECTIVE: The aim of the article is to present the Polish adaptation of the Valierand's Passion Scale.

THE RESEARCH PROBLEM AND METHODS: Does the scale have a two-factore structure in accordance with the theoretical model and the original version? Is the theoretical validity satisfactory? Is the reliability of the scale satisfactory?

THE PROCESS OF ARGUMENTATION: The validation included back translation, estimating reliability and theoretical validity.

RESEARCH RESULTS: Exploratory factor analysis revealed the dual model of the passion, indicating the existence of harmonious and obsessive passion. The results of the confirmatory analysis are also discussed. The Scale has a good reliability of the subscales. The theoretical validity of the Scale was verified by correlations between types of passion and identity interest and flow.

CONCLUSIONS, INNOVATIONS AND RECOMMENDATIONS: The results of validation are satisfactory and the Polish version of the Scale can be applied in scientific research.

→ **KEYWORDS:** **PASSION SCALE, RELIABILITY, VALIDITY, FLOW, PASSION**

STRESZCZENIE

CEL NAUKOWY: Celem artykułu jest prezentacja polskiej adaptacji skali pasji.

PROBLEM I METODY BADAWCZE: Czy skala ma dwuczynnikową strukturę zgodnie z modelem teoretycznym i wersją oryginalną? Czy trafność teoretyczna jest zadawalająca? Czy rzetelność skali jest satysfakcjonująca?

PROCES WYWODU: Walidacja narzędzia objęła tłumaczenie zwrotne, ocenę rzetelności i trafności teoretycznej.

WYNIKI ANALIZY NAUKOWEJ: Eksploracyjna analiza czynnikowa wskazała na rozwiązanie dwuczynnikowe, potwierdzając czynniki pasja harmonijna i pasja obsesyjna. Jednak oryginalny model nie został potwierdzony w confirmacyjnej analizie czynnikowej. Narzędzie charakteryzuje się dobrą rzetelnością podskal. Trafność skali potwierdzają korelacje między rodzajami pasji a zainteresowaniem tożsamościowym i *flow*.

WNIOSKI, INNOWACJE, REKOMENDACJE: Wyniki przeprowadzonej walidacji pozwalają na zastosowanie polskiej wersji skali pasji w badaniach naukowych.

→ **SŁOWA KLUCZOWE:** SKALA PASJI, RZETELNOŚĆ, TRAFNOŚĆ, FLOW, PASJA

Introduction

The theory of passion, devised by Robert Vallerand (2012), belongs to the idea of engagement in an action, developed within positive psychology. Passion is defined as a strong inclination toward an self-defining activity which is liked or even loved by an individual and which is very important for the individual who devotes his or her time and energy to it. Such activity is not a mere entertainment which is pleasant; it is a part of personal identity (Vallerand, 2012). The literature analysis, mainly from the area of philosophy, caused Vallerand and his coworkers to differentiate between the harmonious (HP) and obsessive passion (OP) (Vallerand et al., 2003). The two types of passion have laid foundations for the formulation of the Dualistic Model of Passion (DMP) and were confirmed in the research (Vallerand, 2012). OP is the result of controlled internalization, stemming from intrapersonal or/and interpersonal pressure. People with OP engage in an activity impulsively and are "controlled" by the passion. By contrast, HP is the result of an autonomous internalization of an activity. It takes place when an individual undertakes and activity voluntarily, under no pressure. Such state of mind fosters person's full participation in an activity, with an openness that facilitates positive experiences.

Initial research conducted by Vallerand facilitated establishing of several basic passion-related facts: 84% individuals from the sample of 539 study participants achieved an average passion intensity (Vallerand et al., 2003). They had been engaged in the activity for the average of 6 years and were currently devoting the average of 8.5 hrs

per week to it. Numerous studies have confirmed that passion plays a significant role in quality of life, meaning of life, optimum functioning, physical health and interpersonal relationships. Nevertheless, these relationships favor the harmonious type of passion (Houliort et al., 2015; Vallerand, 2012).

The Passion Scale

The Passion Scale is a tool used in numerous studies on passion based on the Vallerand's DMP (Vallerand, 2012; Vallerand et al., 2003). The Passion Scale consists of 16 statements, 6 for each passion type and 4 items which form a criterion subscale which measure the general passion strength (PS) (Vallerand et al., 2003). The aim of the criterion subscale is distinguishing activities which fulfill passion criteria from those which do not. Bonneville-Roussy et al. (2013) and Vallerand with his team (2003) suggest that, in order to verify whether an individual has a passion, he or she should achieve an average of criterion statements (items 13–16) equal to or higher than 4.

Present Study

The aim of the present research was to devise the Polish adaptation of the Vallerand's Passion Scale. This process consisted of translation (including back-translation), assessment of the scale's reliability, and the assessment of the theoretical validity of the tool. The theoretical validity was verified by the analysis of relationships with certain variables, such as: identity interest, flow (convergent validity), and by verification of the factor structure.

Identity interest is a result of a deep and continuous engagement in an activity, which becomes an element defining one's identity. Therefore, it is an established component in the structure of Self (Kwapis, 2015). A positive relationships of passion types and PS with identity interest were expected, because passion by Vallerand is understood as a result of internalization and is a part of personal identity.

Next, positive correlation between PS and passion types and flow was expected. In the notion formulated by Csikszentmihalyi (1990), flow is a positive state in which the individual is engaged deeply in his or her activities, absorbed in depth by what he or she does (Klinkosz & Sękowski, 2013). A positive relationship between flow and harmonious passion was expected, and – due to the experience of being absorbed by activity – with obsessive passion.

The study verified the following research hypotheses: we expected that (1) the scale has a two-factor structure, in accordance with the theoretical model and similarly to the original version; (2) the reliability of the scales and subscales is satisfactory; (3) theoretical validity is satisfactory, which is marked by: the positive relationship of identity interest with PS and the types of passion; the positive relationship of flow with the types

of passion and PS. Due to the lack of passion-related data in the population of Poles, we additionally checked what percentage of people may be determined as those with passion, for how many years they have engaged in their favorite activity and how much time, on average, they spend on it. In order to find out for how many people the activity meets the passion criterion, we assumed, similarly to the research mentioned above, that the value 4 (as an average of the four statements) in the Passion Strength (PS) criterion subscale is a threshold value which distinguishes those with passion from those without.

Method

Participants and Procedure

The study was a part of other research projects conducted by students supervised by the first author. For this reason, the research hypotheses were verified on four groups with varying sizes. Participation of all individuals was anonymous and voluntary. In the first sample, the relationship of identity interest with the types of passion and PS was analyzed. In the second one – between passion and flow. The third sample consisted partially of all samples mentioned above and data gathered in other motivation-related studies; this data set was used for the reliability analysis, intercorrelations, means and standard deviation for main variables. The fourth sample was used for the purpose of a confirmatory analysis (Table 1). The exploratory analysis was conducted on a random sample of 125 participants (randomly selected from the above samples). The data was collected stationary (not online) by students, in their presence. The study was conducted individually. The Passion scale was always given in the study groups as the last method.

Table 1. Size, gender and age in particular samples

<i>Sample examined</i>	<i>N</i>	<i>% Men</i>	<i>Age M (min-max) [SD]</i>
Sample 1	218	47	30 (19–60) [10.6]
Sample 2	104	58	27.4 (19–49) [7.8]
Sample 3	228	47	30 (19–60) [10.53]
Sample 4	397	31	26.4 (18–60) [8.9]
Random sample	125	44	29.18 (18–58) [9.7]

Source: own elaboration.

Measures

Passion Scale. The first version of the adaptation of the Polish Passion Scale presented in this paper was devised mainly for scientific reasons. The authors obtained the Passion Scale author's consent to conduct adaptation.

The translation procedure included translating instructions and statements from English to Polish by two independent translators. Next, two other professional translators back-translated this content independently from each other. The Polish translations of statements 2, 3, 9, 10, 11, 12, 14, 15, 16 were equal or differed only slightly. Majority of them had similar back-translations, almost identical with the original version. As for items 1, 4, 5, 8 (translator A) and 6 and 13 (translator B) we decided to choose the versions which sounded naturally in Polish and rendered the meaning of the construct better. There were differences in back-translations, but they did not change the meaning of the statements.

Identity Interest Scale. The scale was devised by Kwapis (2018). This tool consists of 11 statements (e.g. *If I didn't perform this activity, I would be a totally different person*), and the respondents indicate to which extent they agree with the statements using numbers ranging from 1 to 7.

The Flow Scale. This scale is one of 17 scales from the Achievement Motivation Inventory by Schuler, Thornton, Frintrup and Prochaska, adapted by Klinkosz and Sękowski (2013). It consists of 10 statements assessed by the study participant on the scale ranging from 1 (*Not at all applicable to me*) to 7 (*Fully applicable to me*).

Results

Preliminary Analyses

Based on the data in the third group, descriptive statistics and intercorrelations between the scales were calculated. One observation was removed due to lack of data. Table 2 shows the descriptive statistics for the passion types and PS, measured by the Passion Scale. Initial analyses indicate significant correlations between subscales. We observed a positive and low correlation between HP and OP, a positive and high correlation between HP and PS, and a positive and moderate correlation between OP and PS. Two participants were excluded from the analyzes due to the lack of data on identity interest (sample 1).

Table 2. Means, standard deviations and intercorrelations for HP, OP and PS ($N = 227$; sample 3)

	<i>M</i>	<i>SD</i>	OP (2)	PS (3)
HP (1)	32.45	6.35	$r = 0.36^*$	$r = 0.72^*$
OP (2)	21.48	8.43		$r = 0.57^*$
PS (3)	5.4	1.3		

* $p < 0.05$

Source: own elaboration.

Main Analysis

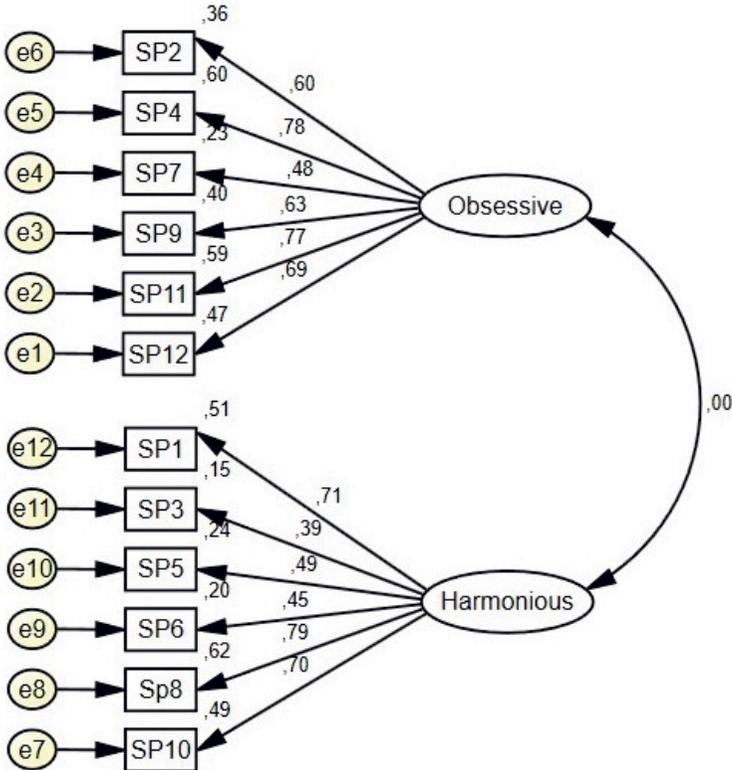
Factor structure and reliability. The factor structure was verified by the exploratory and confirmatory factor analysis. The properties of the data analyzed indicate that the factor analysis can be carried out: the indicator amounts to 0.004; the Bartlett's sphericity test is significant $p < .001$; the K-M-O statistics has the value of .82. The EFA was carried out on 12 items comprising OP and HP.

In the next step, the method of principal components was used. The factors were determined by means of the Kaiser criterion and the scree plot. The three factors fulfill the Kaiser criterion with the eigenvalue of 4.62; 2.35 and 1.01; explaining 66.5% of variance. And the scree plot is steep up to the third component. Taking into account the fact that eigenvalue of the third factor is only marginally higher than one and the scree plot is steep up to the third component, we applied the two-factor solution. In addition, in order to determine the number of factors, we applied the parallel analysis method, whose results also indicate two factors (eigenvalues obtained for the individual factors are as follows: 1.68; 1.49; 1.36). Theoretical background and the original version of the scale also support this solution. In order to calculate factor loadings, we applied the method of principal axis with the oblimin rotation. The result obtained suggests that the two-factor solution explains 50% variance. The first factor loads statements 11, 4, 2, 12, 9, 7 strongly. Factor loadings of these items range from .83 (statement 11) to .42 (statement 7). The second factor consists of items 1, 8, 10, 6, 3, 5, whose loadings range from .71 (statement 1) to .53 (statement 5). All items which refer to OP entered the first factor, whereas all those which refer to HP – to the second one. These results are almost convergent with those obtained in the research on the original version. The factors correlation matrix indicates low positive correlation $r = .23$. However, factor loadings obtained in the model matrix indicate that item 7 has cross loadings (.43 in OP and .36 in HP), similarly to item 5 with the loading for OP and HP amounts to .39 and .53 respectively. In further analyses, the result in the subscales was calculated as the sum of the items that originally belonged to the subscale.

Next, we conducted the confirmatory factor analysis on 12 items of the scale. The examined sample consists of 397 participants (Table 1). Due to low correlation between estimated factors in EFA, we checked both the model in which covariance between latent factors was zero and the one in which it was different from zero. The models were verified by standardized coefficients, obtained by the maximum likelihood method. We expected that the model with two factors, with six items obtained during the preceding exploratory analysis, would match well the data gathered. The results revealed that the model with zero covariance did not have a good matching; the matching tests applied did not report acceptable levels: $CMIN/\chi^2(54, N = 397) = 7.046, p < .001$; CFI = .791; RMSEA = .124 [.112, .135]. The model with covariance between factors did not have a good matching either: $CMIN/\chi^2(53, N = 397) = 7.188, p < .001$; CFI = .791; RMSEA = .125 [.113, .137]. Furthermore, the results obtained indicate the lack of significant covariance between the variable factors, so only the results of the model with zero covariance will be described

further. Standard regression coefficients ranged from .39 to .79. The lowest loading belonged to item 3. Figure 1 shows the model with the values of factor loadings.

Figure 1. The Model with the assumption of zero correlation between factors and standardized regression coefficients in own adaptation of the Passion Scale.



The model described above was subject to modifications. Using the modification indices, we revoked the assumption about the lack of covariance between the measurement errors (residuals) e3 and e4 (items 7 and 9), because these items have very similar meanings and similar statements (Attachment 1). Following the introduction of covariance, the matching indices improved, but they were still too low for the model to be accepted. Therefore, we revoked further assumption about the lack of correlation between errors e9 and e11 (items 3 and 6), because both positions refer to new experiences related to performing activities, which could influence correlated answers of the respondents. As a result, matching indices improved significantly $CMIN/\chi^2(52, N = 397) = 4.653$, $p < .001$; CFI = .879; RMSEA = .096 [.083, .108], but they still did not reach acceptable

level. Simultaneously, the modification introduced reduced the loading value of item 3 to .35, so this item was removed in the following step. Next, based on the high modification index, we revoked the limitation of covariance between e_9 and e_{10} (items 5 and 6). These statements come one after another and start with *This activity*, which could influence the correlation of residuals. Having deleted limitations, the loading of item 6 was reduced to 0.36, this item was also removed from the model. To sum up, two items (3 and 6) within the HP factor, whose residuals were highly correlated, were removed from the model. Modifications improved matching indices: $CMIN/\chi^2(34, N = 397) = 4.328, p < .001$; CFI = .915; RMSEA = .092 [.077, .107]. Modification indices suggested also another two changes: deleting the limitation related to correlations between errors e_1 and e_6 (items 2 and 12: both positions refer to difficulties with controlling one's activities) and adding the regression line to the cross loading, similarly to the EFA, where both factors influence item 5. These changes were introduced separately and the model matching improved significantly after each step. The amended model matched the data: $CMIN/\chi^2(32, N = 397) = 3.063, p < .001$; CFI = .950; RMSEA = .072 [.056, .089]. We also deleted the assumption about the lack of correlation between errors e_{10} and e_7 (items 5 and 10). The residuals of both positions may be correlated, because they describe an activity as the one related to properties and matters which are a part of the individual. Finally, the model differed from the initial as follows: the removal of two positions from the HP factor, the addition of three covariances between the errors, with two of them negative (e_7 and e_{10} , and e_1 and e_6), and the introduction of a path between OP and item 5. Based on values of the indices obtained, we may state that this model matches the data well: $CMIN/\chi^2(31, N = 397) = 2.689, p < .001$; CFI = .96; RMSEA = .065 [.049, .082]. Figure 2 shows the model with standardized regression coefficients.

The reliability analysis was measured by the Cronbach's alpha coefficient for both subscales distinguished in the factor analysis and for items which form a criterion scale, i.e. the PS scale. The analysis conducted on the sample of 228 people (Table 1) indicated a satisfactory reliability level for both passion types, OP ($\alpha = .84$) and HP ($\alpha = .83$), and for PS ($\alpha = .84$).

Theoretical validity. The results obtained confirmed the hypothesis related to the relationship between passion and identity interest (Kwapis, 2015). Identity interest correlates strongly with PS and moderately with HP and OP (Table 3). Low positive relationships were observed between two passion types and PS and flow (Csikszentmihalyi, 1990). This result is in line with our expectations.

Figure 2. The amended Model with standardized regression coefficients

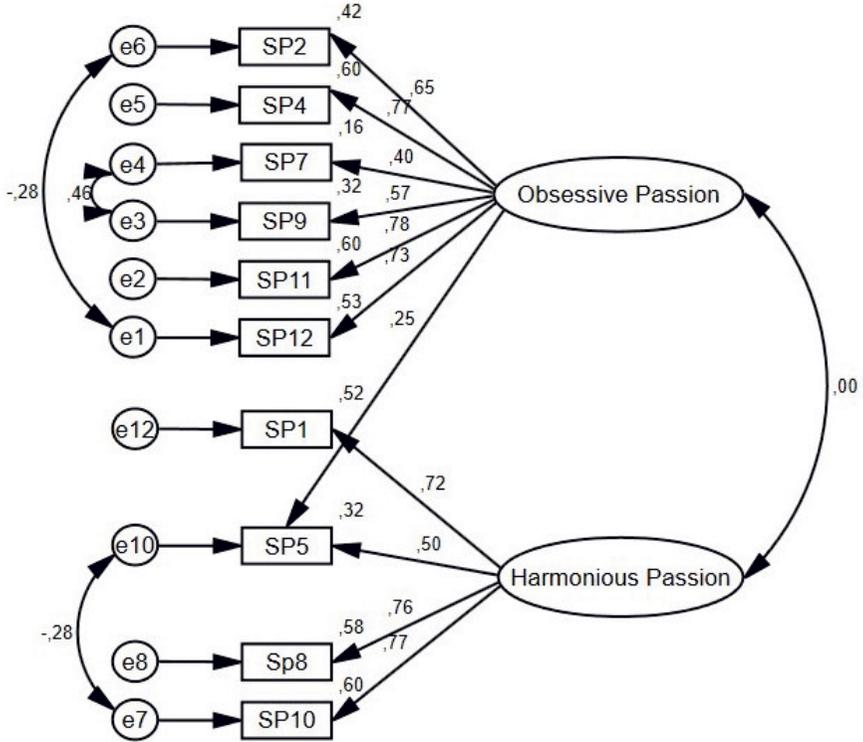


Table 3. The *r*-Pearson correlation between passion types and PS and identity interest, flow and positive orientation in own adaptation of the Passion Scale

	Identity interest (<i>N</i> = 216)	Flow (<i>N</i> = 104)
OP	0.685*	0.269*
HP	0.616*	0.216*
PS	0.808*	0.225*

* $p < 0.05$

Source: own elaboration.

Subsequent analyzes were carried out again on the data from the third group ($N = 228$) in order to check for how many people the activity meets the criteria of passion. The results obtained indicate that 87% people were currently performing their activity that fulfilled all passion criteria. These people devoted an average of 18h28' per week to their activity and had been involved in their passionate activity for more than 10 years.

Discussion

As we expected, the structure analysis conducted by exploratory factor analysis indicated a two-factor solution: harmonious passion (HP) and obsessive passion (OP). We noted that two items (5 and 7) have cross loadings. The reason for that is probably the content of items which may mark both OP and HP. People with HP and OP alike may think that the activity reflects the qualities they like about themselves (item 5) and perceive the activity as the only thing that really turns them on (item 7). Therefore, these items, in comparison with others, differentiate passion types to a less extent.

The original model, however, was not confirmed in the confirmatory factor analysis. There may be several reasons for this. First, the modification indices indicated clearly covariances between residuals, which were not taken into account in the model, which also impacted the matching indices. The release of covariances improved the matching of the model to the data. Interestingly enough, introducing covariance between errors of items 3 and 6 reduced the value of their factor loadings. This means that their common variance is explained to a greater extent by the factor not included in the model. Finally, the two items were removed, which improved matching indices further. The remaining two covariances turned out to be negative. As for the covariance between the residuals e_1 and e_6 (items 2 and 12), it is probably related to non-intuitive formulation of the statement 2 (*Mam trudności w opanowywaniu pragnienia wykonywania mojej aktywności / I have difficulties controlling my urge to do my activity*). We think that the corrected version of the scale should consist of simplified statements, e.g. *Trudno mi pohamować chęć wykonywania aktywności / I have difficulties resisting my urge to do my activity*. Whereas in case of covariances e_7 and e_{10} (items 5 and 10), the relationship between statements is weaker than expected, which may result from inaccurate translation of item 5, which is mentioned below in detail.

The next reason for weak matching of the model was the cross loading of item 5. Its introduction also improved the matching index. The translation may be the reason for problems with this statement. The original says *This activity reflects the qualities I like about myself*, and in translation: *Aktywność ta dobrze wyraża cechy, które w sobie lubię*. Perhaps it was wrongly assumed that *qualities* is equal to *cechy* (*traits, characteristics*). It seems that the more accurate translation of *qualities* is *zalety* (*advantages, strengths*) or *walory* (*positive aspects*). Similarly, also the phrase *reflects* does not mean in the context *wyraża* (*express*), but *ujawnia* (*reveals*) or *pokazuje* (*shows*). Therefore, we suggest the following re-wording of statement 5 in the revised version of the scale: *Aktywność ta dobrze ujawnia moje zalety, które w sobie lubię* (*This activity accurately reveals my strengths which I like about myself*).

The amended model is different from the initial one. We removed items (3 and 6), whose loadings did not reach acceptable levels. Both items were similar, they refer to new experience provided by the favorite activity. Perhaps the cultural factor influences this result; in Poland, performing one's favorite activity is not associated intuitively with new experiences. Further differences are adding three covariances between residuals

and introducing the regression line which joins OP with item 5 (which has cross loadings). Therefore, the matching of the model with two latent factors is achieved by removing two items, taking into account covariances between residual values and influence of the OP factor in item 5, although it belongs to HP theoretically. Perhaps the problem of item 5 would thus be solved once and for all in the revised version.

The results obtained indicate that the subscales of the adapted tool feature an acceptable reliability level. The correlation coefficients obtained confirm the theoretical validity of the Passion Scale. We observed the strongest relationship of PS with identity interest, and of HP and OP with identity interest. The Identity Interest Scale measures the extent to which an individual identifies himself or herself with the activity. This is convergent with the notion of passion as the “part” of the individual’s identity, so high correlations between variables should be treated as the validity indicator of the Passion Scale.

Other hypotheses that were confirmed referred to the relationships with flow. We observed significant, positive correlations with both passion types and with PS. Flow is a positive state in which an individual is engaged deeply in what he or she does, which is accompanied by being absorbed by the work. Therefore, relationships with HP (due to a positive experience) and OP (due to being absorbed strongly by the activity).

The studies on the Polish sample revealed that 87% participants engage in an activity which fulfills the criteria of passion. This result is similar to American observations (Vallerand, 2012). These people devoted an average of 18h28’ per week to their activity and had been involved in their passionate activity for more than 10 years. Unlike the original research where respondents had been engaged in the activity for the average of 6 years and were currently devoting the average of 8.5 hrs per week to it. This may be due to the fact that in the presented studies the favorite activity was often associated with gainful work.

Conclusions and recommendations

To sum up, the Polish version of the scale fulfills the requirements related to psychometric properties in terms of reliability and external validity. It can be used in scientific research in the version that takes into account the proposed changes in items 2 and 5. However, as a new tool, it requires further studies on the revised version, at least for the reason of establishing the factor structure reliably. The likely reason for difficulties with confirming the model proposed by the DMP by means of the CFA are, on the one hand, cultural factors which condition the perception of passion, and, on the other hand, issues related to the translation of individual statements. Moreover, further studies should explore in more detail the differences between individuals for whom passion is a hobby and those for whom it is a gainful work. In further research, it is also possible to carry out an analysis of validity, structure and reliability only on people whose activity meets the criterion of passion. Another significant exploration should focus on relationships of passion with age and gender of the participants.

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