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The multidimensional attitudes scale towards persons with disabilities (MAS) – a Polish adaptation (MAS-PL)

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Abstract

Objective. The aim of this study was to create a Polish adaptation of the Multidimensional Attitudes Scale toward Persons with Disabilities (MAS) by performing a statistical psychometric analysis in a sample of Polish students.

Materials and method. The study included 540 person (82.0% of students and 18.0% of workers), whose attitudes towards the disabled were measured with the Polish version of the MAS (MAS-PL). Mean age of respondents was 24.72 years (SD = 5.7), with a significant majority of women (n = 455, 84.3%). Data was collected during university classes and via an online survey.

Results. Factor analysis yielded a three-factor structure of the MAS-PL, including affective, cognitive, and behavioural domains, which explained almost 45% of the total variance. Further factor-based solutions increased this percentage only slightly (0.8).

Conclusions. The Polish version of the MAS scale (MAS-PL) has been developed and presented as a reliable instrument for studying the attitudes of Poles towards people with disabilities. The scale can be used as a preliminary assessment tool when creating educational programmes, including those for training and social Policy, as well as assessing the effectiveness of programmes. Studies with the use of the MAS-PL will allow comparisons of research findings conducted with the use of MAS scales in other English-speaking (original/English MAS) or Spanish-speaking (Spanish MAS) populations and German (G-MAS), Korean (MAS-K), Serbian (Serbian MAS), Turkish (Turkish MAS) and French populations (French MAS autism).

Key words

disability, attitudes, measurement scale

INTRODUCTION

Due to increased exposure to discrimination and social exclusion, persons with disabilities (PWD) are subject to broad legal protection [1]. The reason for this is the widespread negative attitude towards PWD deeply grounded in societies [2]. It is estimated that there are over one billion people with some disability in the world [3]. According to the official estimates, about 4.7 million of them live in Poland [4]. This indicates the high significance of the problems of this population that consist primarily of serious difficulties in undertaking social activity, i.e., education, work, entertainment.

Global findings from the 1960s (Europe) and the 1970s (United States) assumed that the main problem of the PWD social functioning was rooted in their negative social perception (a label, stigma) leading to social exclusion (isolation, sadness, lack of happiness) [5, 6, 7, 8]. At the same time, the disabled themselves expressed their poor social situation by joining the wave of different social movements created in the USA in the 1960s. During mass protests or demonstrations they demanded more rights and simultaneously objected to being treated only as passive individuals in need of help. The same postulates were implemented in the policies of non-government organizations (NGOs), a approach soon to be called *identity policy* [9, 10].

Since it proved impossible to ignore the above-mentioned social activities, regulations protecting the rights of the disabled appeared in international political and legal documents, the most important being the Standard Rules on the Equalization of Opportunities for Persons with Disabilities, issued by the UN in 1993 [11]. Finally, an innovative social model of disability was defined in the international UN Convention on the Rights of Persons with Disabilities of 13 December 2006 (CRPWD) [12], signed by all EU member states. The Preamble of the CRPWD states that disability is an evolving concept that results from the interaction between persons with long-term impairments (physical, mental, intellectual or sensory) and attitudinal and environmental barriers that hinders their full and effective participation in society as equals with other citizens. All signatory states of the CRPWD [12] are obliged to eliminate such barriers. While the elimination of environmental or

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organizational barriers is relatively easy to enforce, it is much more difficult to change social attitudes toward disability, especially in individual people.

An *attitude* is one of the most fundamental concepts in social psychology. It seems fairly obvious that one's actions are simply a result of what they think or feel. Therefore, in order to induce positive human behaviour, it is necessary to influence what they think and how they feel, and thus how they intend to act. Hence, an attitude is defined as a structure composed of three elements: the affective (or emotional) aspect (i.e. feelings, emotions related to the object of the attitude), the cognitive aspect (thoughts, knowledge and beliefs related to the object of the attitude) and the behavioural aspect (otherwise known as motivational, including declared or intended behavior / actions toward the object of the attitude) [13, 14, 15].

The signatory states of CRPWD have an obligation to influence the change of negative social attitudes by raising public awareness of disability, and combating stereotypes or prejudices through information campaigns or creating a positive image of PWD (CRPWD art. 8). Unfortunately, negative attitudes toward PWD remain prevalent in western countries despite decades of inclusion policy and law [16].

Research indicates a need for separate education of various social groups (children, teachers, employers, medical specialists [8] especially in 'disability awareness training' which may increase positive attitudes [17, 18]. Effective information and education activities require proper evaluation of attitudes toward PWD, which is possible with the help of specially designed assessment tools, several dozen of which are currently available [13, 15–23]. Researchers worldwide are investigating these attitudes with recognized questionnaires of confirmed validity and reliability measures, subjected to various validation processes with the consent of their authors.

In Poland, no studies have been conducted so far on any scale designed to assess attitudes towards people with disabilities irrespective of their type, which would be recognized and applied in international research, enabling comparison of results. In the 1960s, Dr. HE Yuker created the best known scale – Attitudes Toward Disabled Persons scale (ATDP), which has been and translated into several dozen languages [24]. However, in time, it turned out that there is a need to create more multidimensional tools to study the attitudes of individual social groups. Based on a research review [13, 15, 20–23], it was concluded that the Multidimensional Attitudes Scale Toward Persons With Disabilities (MAS) created by Findler, Vilchinsky and Werner [13] is a recognized, multidimensional tool enabling support instrument design, as well as implementation of educational initiatives to improve attitudes towards people with disabilities in all social groups and for all disability types [21]. The MAS corresponds to the tripartite model of attitude [25], designed to measure their affective, cognitive and behavioural components. It was considered to have good overall utility due to its excellent internal consistency and good validity. The tool's concurrent validity was tested against the ATDP scale (affective and behavioural domains) [23].

OBJECTIVE

The first aim of the study was to obtain the consent of the relevant authors to carry out the adaptation process, carry out the translation tool, and a pilot study to provide data to verify its basic psychometric properties in the Polish population. Comparison of the Polish MAS with the original scale was undertaken by performing statistical psychometric analysis.

MATERIALS AND METHOD

Procedure. Having identified the need for such assessment tools in Poland, potential instruments were reviewed and the MAS selected as the most appropriate scale. In March 2017, upon e-mail contact with the toll's first author, permission was obtained to start the adaptation process, together with all the necessary materials.

Due to the linguistic simplicity of the questionnaire, its translation into Polish was conducted by the Polish version's first author. When creating the translation, the authors attempted to maintain equivalence with the original text in terms of graphics (façade equivalence) and, above all, with the function it was to fulfill (functional equivalence) to assess attitudes towards PWD in terms of declared emotions, behaviours and beliefs. First, the identical graphical form of the original MAS scale was used, and thus full façade equivalence was maintained. Next, in order to approve the Polish translation, a focus group was established, including clinical psychologists and medical university teachers, who used English in their scientific and didactic endeavours. During the meeting, the panel of experts compared the Polish translations with the original version, and the use of words in the context of research objectives was discussed to maintain functional equivalence. Alternative versions of certain words and phrases were presented, and the panel selected those that were considered the most appropriate or proposed brand new terms – all decisions were made unanimously. After all discussed corrections were made by the first author, the final version of the Polish scale was approved by the appointed experts.

It was decided to dispense with the services of professional translators for several reasons. First of all, the knowledge of English by both the researcher and the expert panel was sufficient to translate this linguistically simple questionnaire. In addition, possible language difficulties could occur considering only the deeper meaning of words and their use in terms of achieving specific research goals, or in connection to the Polish cultural background. Therefore, such problems were not to be solved by translators, but rather by experts in the field (i.e. panel psychologists). Next, the basic psychometric characteristics of the MAS-PL were tested on a Polish sample of 408 students. Having completed the project, the effects were sent to the authors for final acceptance in March 2019.

Instrument. In the study a short socio-demographic survey was used, collecting data such as: age, gender, place of residence, university major, and year of study, and the Polish version of the MAS (MAS-PL).

The structure of the MAS-PL (see Appendix) corresponds to the original MAS scale by Findler, Vilchynski and Werner [13], which is a tool measuring attitudes of the general

population. The scale consists of 3 subscales corresponding to the 3 components of attitudes: emotional, cognitive and behavioural domains, including a total of 34 items. Each subscale of this self-report instrument contains a list of emotions (16 items), ideas and beliefs (10 items) and declared behaviors (8 items). The MAS scale begins with a vignette and description of a scenario of an accidental and forced by circumstances meeting in a cafe of a fully-abled person (Joseph / Michelle) with a person in a wheelchair (male/female). The respondent is to imagine this situation and indicate the emotions, thoughts and potential behaviours it can elicit in non-disabled people (in the plural). Therefore, the questions are not addressed to the respondent directly, but based on a projection mechanism ensuring greater honesty of the answers [13]. The social scenario vignette was applied to have respondents project their own emotions, thoughts, and behaviours onto the given situation. In addition, this modular instrument, which employs a concrete real-life scenario, could be adapted to apply to a variety of situations and disabilities [13].

In order to facilitate the respondent's thorough understanding of the roles played by the persons mentioned in the scenario, the names of the non-disabled person in the MAS-PL vignette were changed to names that are more popular in Poland (Adam/Ewa), and no personal pronouns ('he'/'she') were used, referring to the characters as 'Adam'/'Ewa' and 'wheelchair user' throughout the form (at the beginning it was explained that the wheelchair user was either a man or a woman). The answers are provided on a 5-point Likert scale, where 1 means 'not at all' and 5 'very much'. Higher scores represent more negative attitudes, and positive items require reverse scoring.

During translation, especially in the case of emotional indices, all potential cultural differences were considered (and consulted with fellow psychologists).

In the cognitions subscale, the term 'OK person' was avoided because despite the fact that the expression 'OK' is widely used in the Polish language when referring to a person, the more natural thing to say is 'he'/'she is fine'.

Study participants. The study involved 540 people aged 19 – 60, mostly students (81.0%, n = 443). 408 students (75.6% of the group) participated in the direct study, while 132 people (24.4%) participated in the on-line follow-up study. The full socio-demographic characteristics of the group are presented in Table 1.

Statistical analysis. Statistical analysis was carried out with the IBM SPSS Statistics v.25 package. In order to assess the structure of the Polish version of the MAS scale, the Principal Components Factor Analysis and Varimax rotation with Kaiser normalisation were performed, while the reliability of the tool and its subscales were evaluated using Cronbach's alpha. The relationships between individual MAS scales and selected socio-demographic variables were determined by pairwise correlations with the Spearman rho coefficient, while gender differences were tested with the non-parametric Mann-Whitney U test. The normality of distributions was verified with the Shapiro-Wilk test. Statistical significance was set at $p < 0.05$, while $p < 0.1$ was considered to indicate a not fully significant statistical tendency.

Table 1. Socio-demographic characteristics of the sample (N=540)

Variable	M / N	SD / %
Age	24.72	5.73
Gender		
Female	455	84.3
Male	85	15.7
Place of residence		
Rural areas	74	13.7
Small town	125	23.1
City	341	63.1
Status on the labour market		
Student	443	82.0
Employed	91	16.9
Unemployed	6	1.1
University major (n=443)		
Administration / management	10	2.3
Biotechnology	18	4.1
Nutrition	87	19.6
Physiotherapy	140	31.6
Cosmetology	69	15.6
Nursing	44	9.9
Obstetrics	22	5.0
Medical emergency services	18	4.1
Other	35	7.8
Year of study (n=443)		
I	226	51.0
II	120	27.1
III	83	18.7
IV	8	1.8
V	6	1.4

M – mean; N – number of observations; SD = standard deviation
Source: own elaboration.

RESULTS

Psychometric characteristics of the Polish version of the MAS Scale. Since different language versions of the MAS yielded different factor structures, analysis of its Polish version commenced with determining the number of individual scales. During the Factor Analysis, 8 factors achieved total loading higher than 1, 3 of them higher than 2. Based on the interpretation of the scree plot (Fig. 1) and the percentage of the explained variance, it was found that, similarly to the original version, the MAS-PL performed a 3-factor structure, explaining a total of slightly over 45% of the observed variance. Additional simulations testing the possibility of listing 4 factors (as in the French-language version) [26] or 5 factors (as in the original version) [27] failed, which led to the decision to leave the original 3-factor solution.

The 3-factor model explained a total of 44.754% of the variance, and further factor solutions increased this percentage only to a slight degree (<5%), according to well sample adequacy [KMO = 0.877; X2 (561) = 8723.737; $p < 0{,}001$]. Factor analysis was supplemented by Varimax rotation with Kaiser normalization for uncorrelated factors,

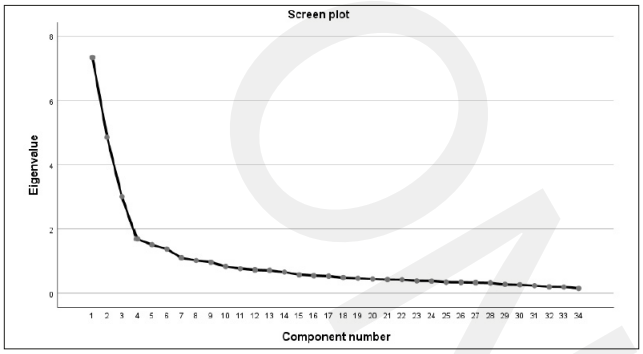

Figure 1. A screen plot yielding a 3-factor MAS-PL structure.
Source: own elaboration

exactly the same as the authors of original MAS scale and other adaptations. Correlation between particular factors are presented in a separate Table. This procedure showed that the internal structures of all MAS-PL scales are very similar to the original one. Only 2 items included in the emotional domain loaded more than 1 factor, while the other items had strong (> 0.8) to weak (< 0.3) factor loadings. The rotated component matrix of the MAS-PL is presented in Table 2. Loadings of negligible strength (< 0.1) were hidden to increase readability of results.

Table 2 also contains information about the reliability of individual MAS-PL scales. The entire tool (34 items) was characterized by a very satisfactory reliability (α = 0.875). Also, factors measuring individual components of attitudes towards the disabled were characterized by a significant measurement accuracy – each scale achieving a reliability ratio exceeding α = 0.8. Similar to the original version of the MAS and all its adaptations, a slightly lower reliability was found for the behavioural scale, which, however, may be related to the fact that it is the shortest one (8 items).

Research on the different language versions of the MAS yielded different results regarding correlations between its individual components. Table 3 presents the results of correlation analysis between affective, cognitive and behavioral MAS-PL subscales.

Table 3. Spearman's correlation coefficients between individual MAS scales

	1	2	3	4
1) Global MAS	-			
2) Affective MAS	0.827***	-		
3) Cognitive MAS	0.529***	0.128**	-	
4) Behavioral MAS	0.611***	0.286***	0.217***	-

** p<0.01; *** p<0.001
Source: own elaboration

Score distribution in the measurement of attitudes towards the disabled. Table 4 includes information on the results of the pilot study with the use of the MAS-PL. Distribution of the global score was clearly similar to normal distribution, typical for the general population, as evidenced by the insignificant result of the Shapiro-Wilk test. Similarly, distribution of the longest of the subscales, measuring the emotional component of attitudes towards the disabled, can also be regarded as essentially similar to normal distribution. In turn, the other 2 distributions are significantly different from the Gaussian curve (p < 0.001). In the measurement of the cognitive component, a higher frequency was observed of average results in relation to extreme ones, while in the measurement of behavurs towards the disabled, there were numerous disproportions in the frequency of individual score categories.

The MAS-PL turned out to be related to some socio-demographic factors. In the behavioural scale, men achieved

Table 2. Principal component factor analyses with Varimax rotation and Cronbach's alpha

MAS factors	Affects	Cognitions	Behaviours
Stress (emotion 2)	0.786		
Upset (emotion 11)	0.780		0.200
Tension (emotion 1)	0.774		
Nervousness (emotion 4)	0.749		
Fear (emotion 10)	0,688		0.115
Shame (emotion 5)	0.665		0.231
Shyness (emotion 13)	0.648		
Helplessness (emotion 3)	0.645		0.197
Calmess (emotion 8)	– 0.633	– 0.272	
Relaxation (emotion 6)	0.567	-0.246	
Guilt (emotion 12)	– 0.554		0.213
Serenity (emotion 7)	– 0.507	– 0.302	
Depression (emotion 9)	0.490		0.128
Pity (emotion 14)	0.382	– 0.158	0.146
He/she looks friendly. (cognition 4)		– 0.792	
We may get along really well (cognition 3)		– 0.783	
He/she is fine (cognition 2)		– 0.752	0.142
Why not get to know him/her better? (cognition 9)		– 0.715	
He/she seems to be an interesting boy/girl (cognition 1)		– 0.707	0.181
I can always talk with him/her about things that interest both of us (cognition 7)		– 0.627	
I enjoy meeting new people (cognition 5)	– 0.184	– 0.622	
I can make him/her feel more comfortable (cognition 8)	0.101	– 0.604	
He/she will enjoy getting to know me (cognition 6)		– 0.590	
He/she will appreciate it if I start a conversation (cognition 10)	0.232	– 0.368	0.155
Get up and leave (behaviour 2)			0.826
Find an excuse to leave (behaviour 5)	0.199		0.754
Read the newspaper / talk on a cell phone (behaviour 3)	0.153		0.741
Move away (behaviour 1)	0.211		0.726
Move to another table (behaviour 6)			0.694
Start a conversation. (behavior 8)	0.140	– 0.367	– 0.443
Initiate a conversation if he / she doesn't make the first move (behaviour 7)	0.152	– 0.367	– 0,417
Disgust (emotion 15)	0,353		0,395
Continue what he / she was doing (behaviour 4)	0.155		0.314
Alertness (emotion 16)	0.195	– 0.123	0.223
% of explained variance	**18.493**	**14.906**	**3.860**
Reliability	**0.886**	**0.860**	**0.807**

Source: own elaboration

Table 4. Basic distribution of results in the MAS-PL (N = 540)

MAS	Possibile range	Min.-Max.	M	SD	Skewness	Kurtosis	S-W test
Global score	34–170	36–123	80.90	15.64	– 0.025	– 0.262	0.605
Affective	16–80	16–70	40.22	10.82	0.157	– 0.435	0.006
Cognitive	10–50	10–50	22.85	6.07	0.267	0.660	<0.001
Behavioral	8–40	8–36	17.84	5.39	0.426	– 0.156	<0.001

M – mean; SD – standard deviation; S-W test – Shapiro-Wilk's test of normality
Source: own elaboration

significantly more points, by an average of 1.46 points (Z = – 2.185; p = 0.026), while women tended to have a higher emotional component (on average by 2.57 points, Z = – 1.729; p = 0.084). Intensity of the emotional component decreased slightly with age (rho = – 0.079; p = 0.071), while the intensity of the cognitive component increased (rho = 0.077; p = 0.078). A lower level of education was also conducive to weaker emotional reactions (rho = – 0.099; p = 0.021). On the other hand, the size of the place of residence was not associated with any dimension of the MAS. Working people and students did not differ from each other, neither in the overall result nor in individual subscales.

DISCUSSION

The aim of this study was to conduct cultural adaptation of the MAS for the Polish population and to examine its factor structure, reliability and links between attitude and socio-demographic factors, such as: age, gender and place of residence. The Polish version of the MAS was characterized by a similar factor structure as the original MAS from 2007 [13], including 3 subscales (affect, cognition, behaviour) and 34 items, and a satisfactory reliability. The obtained results suggest that the MAS-PL can be used to assess attitudes towards PWD in Poland, which can then be compared with international data collected in research with the use of the MAS scale [26, 28–36].

In the majority of population studies, the other language versions showed the same factor structure – i.e. 3 internally consistent and mutually independent factors, corresponding to the 3 components of an attitude. Some studies, however, suggested the possibility of a different approach to the MAS domains, e.g. the identification of 4 factors, including division of the emotional aspect into positive and negative affect.

The 3-subscale MAS adaptation was successfully conducted in the Serbian [29], Korean [33] and Turkish [34] samples. However, some adaptations [e.g. 29] introduced language changes, consisting in adding, deleting or changing various items. For instance, in the Serbian MAS, 2 subscales for each factor were finally distinguished, including their positive and negative aspects in the following manner: affects (negative emotion, but potentially positive/strong negative emotions), cognitions (positive / perplexing), behaviours (avoiding / approaching).

A 4-dimensional MAS (negative affect, calm, positive cognition, behavioural avoidance) with modified items was first introduced in the Spanish version in 2013 [31–30 items], then implemented in the French version in 2015 [26 -20 items], and the German version in 2018 [35–16 items]. In recent studies, researchers using Confirmatory Factor Analysis demonstrated a better fit of the 4-factor model (Comparative Fit Index CFI>.95) [35]. However, studies on the Polish3- factor model showed that each scale achieved a reliability coefficient exceeding α = 0.8, and the addition of subsequent sub-scales failed to yield satisfactory effects. Similar results were reported with the Turkish scale [34]. The internal consistency coefficient for the entire Turkish version of the MAS was α= 0.90, which was not reported even for the original scale [13]. Similar findings were described by Lunde and Seekins in their study with the use of the original MAS on a sample of young Americans [32], and in a study by Banks [28]. A comprehensive comparison of the reliability measures of the different language versions of the MAS are presented in Table 5.

Table 5. Internal consistency (Cronbach's alpha) for a three-factor MAS structure by different authors

MAS, number of items	Authors, year	Sample	MAS Factors			Total
			Affects	Cognitions	Behaviors	
Original MAS, 34 items	Findler et al. 2007	132 Jewish Israelis	0.90	0.88	0.83	-
Turkish MAS, 34 items	Yelpaze and Türküm 2018	165 Turkish university students	0.88,	0.89	0.84	0.90
Korean MAS-K, 34 items	Kim et al. 2015	213 South Korean undergraduate participants	0.87	0.88	0.84	-
English MAS, 34 items	Lunde and Seekins 2014	50 American college students (USA)	0.876,	0.892,	0.792	0.91
English MAS, 34 items	Banks 2008	140 American college students (USA)	0.88	0.89	0.83	0.91
Polish MAS-PL, 34 items		408 Polish medical university students	0,870	0,853	0,810	0,869

Source: own elaboration

To date, there have been 2 attempts to adapt the MAS to measure attitudes towards a particular disability. In French research, the 4-factor model applied to measure attitudes towards people with autism, demonstrated satisfactory internal consistency for the entire scale (α = 0.79) and for individual factors (negative affects α = 0.74, calm α = 0.86, cognitions α = 0.76, behaviours α = 0.91). In Dutch research [34], an attempt was made to apply a 3-factor model to assess attitudes towards deaf, blind, paralyzed or intellectually disabled persons. As a result, a separate questionnaire was created for each disability. As there was no clear factor structure that would apply to all 4 types of disability, no further analysis of the MAS questionnaire was carried out.

In 2 studies (on the Korean and Ethiopian samples), apart from the MAS scale, the Marlowe-Crowne Social Desirability Scale (MCSDS) was used to assess the level of social desirability [37]. A study by Getachew [30] on a sample of Ethiopian college students suggested that the respondents did not tend to react in a socially desirable way by expressing negative attitudes towards the disabled. However, this was due to the fact that such attitudes were not culturally disapproved, and, what is more, the respondents did not feel the need to

be socially accepted – presumably due to the elitism of the student status in Ethiopia. In contrast, Korean studies showed a confounding, significant influence of the level of social desirability on the affective and cognitive domains of the MAS-K. The semi-correlations (sr) between social desirability and the cognitive domain (sr = -.202, p <.001), as well as the affective domain (sr = -.242, p =.002) in the MAS were significant and in the negative direction. Therefore, it was recognized that social desirability may influence attitudes towards disabled people, or their particular domains.

In this study, as in the case of most studies using the MAS, including the originversion, the level of social desirability was not examined. Still, the structure of the MAS uses the mechanism of projection to avoid dishonest responses – the respondent is asked to assess how an abstract character (and not him or herself) feels, thinks and behaves in contact with PWD, thus projecting his or her own mental states.

The MAS scale is an excellent tool used by researchers to perform preliminary and final evaluation of the effectiveness of educational programmes, including training or social policy programmes. For example, the MAS scale was used in research 'college students perceptions on effects of volunteering with adults with developmental disabilities'. The results found significant positive changes in the attitudes of students [38]. In turn, to examine the effectiveness of disability awareness training (DAT), the Spanish MAS was used (pre- and post-DAT). There were significant positive changes in 2 of 4 MAS constructs: emotion p =.005 and cognition p =.003[17] Other studies on the Gamified Disability Awareness Programme on the Peers' Disability showed significant positive changes in factors of the Korean version of the MAS scale (applied before and after the programme) [39].

Limitations of the study. In the current study, the majority of the study group were students. In the original MAS study, as well as in most of the other adaptations and other research with the MAS scale, the majority of participants were also students (Tab. 5).

In the current study, the vast majority of students studied medical fields, of which about 25% were physiotherapy students who may have slightly different opinions than other people due to the specificity of their work (helping patients, including those with disabilities), and their possible earlier contact with people with disabilities during their studies. However, there were no significant differences between students and employees, which may suggest that medical students are not a particularly sensitive group.

In the present study, the majority of respondents were women, which, according to research, usually results in more positive attitudes towards people with various disabilities [27, 40, 41]. However, there are studies in which men declared more positive attitudes regarding knowledge of the capacity and rights factors [42]. In the current study, no significant relationships were found between the MAS scale and selected socio-demographic factors. However, weak tendencies indicated slightly more negative attitudes in men. In contrast, women were characterized by a more positive attitude towards people with disabilities.

In addition, the presented sample included mostly young people, which, according to different studies, may result in more positive [40], negative [13, 36] or neutral attitudes towards the disabled – i.e. young age does not clearly influence these attitudes [33, 43]. In this study, no significant association was observed between age and the MAS score, except for a slight positive tendency suggesting a (still non-significant) link between the cognitive domain and age, which probably stems from educational progress or accumulated experience. In view of that, and due to increased research and educational opportunities, researchers tend to focus on investigating young people's attitudes [28, 30–35].

Following Kim et al. [33], it should be stressed that socio-demographic factors, especially those related to gender and past contact, may not necessarily be the most significant ones in shaping people's attitudes towards the disabled. In addition, attaching great importance to demographic variables may lead to stereotyping of respondents, and thus distorting research results or educational initiatives.

A slight limitation may also be the fact that the validity of the Polish version of the MAS was not verified in an empirical way. This was dictated by a lack of tools that could be used to check its convergent or divergent validity, and the fact that none of the reported population studies questioned the tool's validity. What is more, the essential criteria of goodness (copying the original structure and achieving significant measurement reliability) suggested that the MAS-PL was a valid and reliable tool to accurately differentiate the attitudes of the subjects.

CONCLUSIONS

The Polish version of the MAS scale (MAS-PL) has been developed and presented as a reliable instrument for studying the attitudes of Poles towards people with disabilities. The scale can be used as a preliminary assessment tool when creating educational programmes, including those for training and social policy, as well as assessing the effectiveness of the programmes. Studies using the MAS-PL will allow comparisons of research findings conducted with the use of MAS scales in other English-speaking (original/English MAS) or Spanish-speaking (Spanish MAS) populations and German (G-MAS), Korean (MAS-K), Serbian (Serbian MAS), Turkish (Turkish MAS) and French populations (French MAS autism).

Declaration of interest statement

The authors declare that they have no competing interests.

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Appendix
Wielowymiarowa skala postaw względem osób niepełnosprawnych (MAS-PL)

		Stopień prawdopodobieństwa				
Emocja		**Wcale**				**Bardzo silna**
1.	Napięcie	1	2	3	4	5
2.	Stres	1	2	3	4	5
3.	Bezradność	1	2	3	4	5
4.	Nerwowość	1	2	3	4	5
5.	Zawstydzenie	1	2	3	4	5
6.	Odprężenie	1	2	3	4	5
7.	Pogodność	1	2	3	4	5
8.	Spokój	1	2	3	4	5
9.	Smutek	1	2	3	4	5
10.	Lęk	1	2	3	4	5
11.	Zdenerwowanie	1	2	3	4	5
12.	Poczucie winy	1	2	3	4	5
13.	Onieśmielenie	1	2	3	4	5
14.	Współczucie	1	2	3	4	5
15.	Obrzydzenie	1	2	3	4	5
16.	Czujność	1	2	3	4	5

Ludzie, którzy uczestniczą w takiej sytuacji, doświadczają różnych *emocji*. Poniżej znajduje się lista możliwych emocji, które mogą powstać przed, w trakcie i/lub po takiej sytuacji. Oceń w każdej linii prawdopodobieństwo, że ta *emocja* może pojawić się u Adama/Ewy.

Ludzie, którzy biorą udział w takiej sytuacji, doświadczają różnorodnych *myśli*. Poniżej znajduje się lista możliwych myśli, które mogą powstać przed, w trakcie i/lub po takiej sytuacji. Oceń w każdej linii prawdopodobieństwo, że te myśli mogą się pojawić u Adama/Ewy wobec osoby na wózku inwalidzkim.

		Stopień prawdopodobieństwa				
Przekonanie/Myśl		Wcale				Bardzo silne(a)
1.	On/ona wydaje się być interesującą osobą.	1	2	3	4	5
2.	On/ona wygląda na osobę w porządku.	1	2	3	4	5
3.	Możemy się dobrze dogadać.	1	2	3	4	5
4.	On/ona wygląda przyjaźnie.	1	2	3	4	5
5.	Lubię poznawać nowych ludzi.	1	2	3	4	5
6.	Będzie jemu/jej miło poznać mnie.	1	2	3	4	5
7.	Zawsze mogę z nim/nią porozmawiać o rzeczach, którymi oboje się interesujemy.	1	2	3	4	5
8.	Mogę sprawić, że on/ona czuje się bardziej komfortowo.	1	2	3	4	5
9.	Dlaczego nie poznać jego/jej lepiej?	1	2	3	4	5
10.	On/ona będzie wdzięczny(a), jeśli rozpocznę rozmowę.	1	2	3	4	5

Ludzie różnie się *zachowują*, gdy uczestniczą w takiej sytuacji. Poniżej znajduje się lista możliwych zachowań, które mogą mieć miejsce przed, w trakcie i/lub po takiej sytuacji. Oceń w każdej linii prawdopodobieństwo, że Adam/Ewa *zachowaliby się* w następujący sposób:

		Stopień prawdopodobieństwa				
Zachowanie		**Wcale**				**Bardzo silne**
1.	Odsunie się	1	2	3	4	5
2.	Wstanie i wyjdzie	1	2	3	4	5
3.	Czyta gazetę lub rozmawia przez telefon	1	2	3	4	5
4.	Kontynuuje to, co robił/robiła	1	2	3	4	5
5.	Znajdzie wymówkę, aby wyjść	1	2	3	4	5
6.	Przesiądzie się do innego stołu	1	2	3	4	5
7.	Zainicjuje rozmowę, jeśli on/ona nie wykona pierwszego kroku	1	2	3	4	5
8.	Rozpocznie konwersację	1	2	3	4	5