



Original Article

Multidimensional assessment of assertiveness: Assertiveness, passivity, and aggressivity scales

 Cem Malakcioğlu

Istanbul Medeniyet University Faculty of Medicine Department of Medical Education, İstanbul, Türkiye

Abstract

Objectives: Assertiveness is among the fundamentals of therapeutic communication. It is a psychosocial protective factor for individuals and positively influencing others communicated with. In the literature, assertiveness is inversely related to aggressivity and passivity. It was aimed to examine the psychometric properties and interrelationships of assertiveness, aggression, and passivity scales developed for multidimensional assessment of assertiveness in this study.

Methods: This is a scale development study. For content validity, items were evaluated by seven experts. The comprehensibility was verified by the pilot application (n=32). Data were collected from 755 medical students at İstanbul Medeniyet University in January 2022. For construct validity, both explanatory (n=423) and confirmatory (n=332) factor analyzes were used in separate groups. Data for test-retest reliabilities were collected at 4-week intervals (n=38). IBM SPSS 25 and AMOS 24 were used for analyses. Statistical assumptions were tested beforehand.

Results: In each of assertiveness, aggression, and passivity dimensions; five items within three subdimensions were clustered. The subdimensions were named according to the literature: Openness, calmness, and kindness (Assertiveness); cruelty, unfairness, and furiousness (Aggressivity); introversion, shyness, and embarrassment (Passivity). The explained variances of dimensions were between 60 and 67% in EFA, and item factor loadings were between 0.49 and 0.90 in CFA. All correlations between items and scale scores were significant at 0.01 level. Test-retest reliabilities were all above 0.6 (p<0.01). Cronbach α internal consistency reliabilities were between 0.735 and 0.895.

Conclusion: Assertiveness, aggressivity, and passivity scales and their subscales can assess assertiveness multidimensionally, reliably, and validly. They can be used together or separately for assessment and research.

Keywords: Assertiveness; aggressivity; passivity; communication; assessment.

Among the characteristics of therapeutic communication, Assertiveness is defined as establishing connections between feelings, thoughts, and behaviors to express them most appropriately without attempting to dominate others and without engaging in any behavior to force themselves and others.^[1] It is an interpersonal relationship style without being the oppressor or the oppressed^[2] but being kind to others, being able to stay calm while openly expressing oneself. Assertiveness is among many soft skills such as self-determination, resilience, empathy, social support, and teamwork; soft skills contribute to academic success in addition to personal,

social, and professional skills. In fact, assertiveness is one the main dimensions of soft skills inventory.^[3] Assertiveness has been defined through many different concepts in Turkish, such as: Being sociable (girişkenlik), being decisive and courageous (atılçanlık), being confident (güvengenlik). These are all inter-related soft skills. However, it seems that confidence encapsulates others. So, the term "güvengenlik" (being confident) was preferred for the naming of the scale in Turkish.

Assertiveness is part of socioemotional development. It begins to progress at early ages by observing interpersonal

Address for correspondence: Cem Malakcioğlu, İstanbul Medeniyet University, Faculty of Medicine, İstanbul, Türkiye

Phone: +90 216 280 33 33 **E-mail:** cemmalakcioglu@gmail.com **ORCID:** 0000-0002-4200-0936

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relationships. Children of assertive parents often become assertive when they grow up.^[4] Assertiveness trainings can start as early as possible for maximum effectiveness.^[5] Young children can benefit from social skill-building education by becoming more assertive and less passive or aggressive.^[6] In interpersonal skill development programs for adolescents, assertiveness is highly and positively correlated with conflict management strategies and self-esteem in sports by becoming physically and socially active.^[7] Assertive people are seen more active but less aggressive in comparison to others. Some cultural comparisons of assertiveness were also made, such as Asian Americans were found less assertive than European Americans,^[8] and Swedish adolescents were more assertive than their Turkish peers.^[9] In Western cultures, several assertive characters were portrayed as role models; even in cartoons and animated movies for children.^[10] Gender also plays a role in modeling assertive behavior. Assertive and aggressive heterosexual male stereotypes outnumber other genders in the universal media.^[11] Thus, females are generally believed to be more passive or passive-aggressive as opposed to aggressive or assertive males.

Assertiveness supports autonomy through increasing self-esteem and locus of control.^[12] For example, teachers can facilitate assertiveness in their students instead of passive and/or aggressive behaviors.^[13] The roles of adults, especially rigid authority of teachers in addition to authoritarian parenting style have negative influences on the development of assertive behaviors in youngsters.^[14] Even medical students expect to see more assertive and responsible rather than aggressive and unresponsive faculty members as role models.^[15] On the other hand, assertiveness is inversely related to passive behaviors in students such as procrastination of academic duties.^[16] Assertiveness provides motivation and reward mechanism in health-related behavior change processes and academic life.^[17] Lower levels of assertiveness are highly related to aggressive behaviors,^[18] and improvement of social skills contributes to assertive behavior.^[19] Hence, aggressivity and passivity dimensions should be included in the assessment of assertiveness.

There are some assertiveness scales available, but most of them are unidimensional. In some of them, some items were included about aggressive and passive behaviors with reverse scoring, but this process decreases validity according to current methodological research of psychometry.^[20] For example, the Rathus Assertiveness Inventory as a widely used assertiveness measure contains reverse scoring of some items. To deal with this problem, distinct scales for inversely correlated constructs can be created and used together or separately. Another problem of validation may come from adaptation of scales. For example, the adaptation of the Irish assertiveness scales to Arabic.^[21] Rather than adapting from a different culture, original scales should be developed due to cultural differences and sensitivities of personality-tied change-resistant psychological qualities such as assertiveness, aggressivity, and passivity. Thus, the main objective of this study was to develop original scales based on current literature and psychometric

What is presently known on this subject?

- As a basic element of therapeutic communication, assertiveness contradicts with being passive, aggressive, or passive-aggressive behaviors; assertiveness is necessary both for psychological well-being and effective social interaction.

What does this article add to the existing knowledge?

- The results showed that assertiveness has some core dimensions: Openness, calmness, and kindness; assertiveness and all of its dimensions were inversely correlated with the dimensions of passivity: Introversion, shyness, and embarrassment; and the dimensions of aggressivity: Brutality, unfairness, and furiousness; therefore, assessment of assertiveness should be multidimensional and should include dimensions of passivity and aggressivity.

What are the implications for practice?

- Through the multidimensional assessment, specific weaknesses and strengths can be detected for assertiveness along with passive, aggressive, and passive-aggressive behaviors. Moreover, these assessment results can be used in planning and evaluating interventions aiming to improve assertiveness while decreasing passivity and/or aggressivity.

methodology. In this study, it was aimed to investigate the psychometric properties of originally developed assertiveness scale (ASS), passivity scale (PAS), and aggressivity scale (AGS) targeting multidimensional assessment of assertiveness. The study questions are:

- Can ASS validly and reliably assess assertiveness?
- Can PAS validly and reliably assess passivity?
- Can AGS validly and reliably assess aggressivity?
- Are assertiveness and its sub-dimensions inversely correlated with passivity, aggressivity, and their sub-dimensions?

Materials and Method

Research Design

This is a scale development study. The present study is designed for testing validity and reliability of ASS, PAS, and AGS targeting multidimensional assessment of assertiveness.

Ethical Considerations

İstanbul Medeniyet University Faculty of Medicine Clinical Research Ethics Committee granted approval for this study (date: October 06, 2021, number: 2021/0502). The study was explained in the informed consent form and confidentiality was assured. Informed consents were collected from participants according to the ethical committee approval. All procedures were carried out in accordance with the Helsinki declaration.

Sample

Data from 755 students studying medicine in İstanbul Medeniyet University were appropriately collected online through Google forms in January 2022. The registered total medical student number was 1056; thus, 71.5% of them participated in this study. All participants were native or proficient speakers of Turkish language. The only exclusion criterion was being below 18 years old. None of them was excluded because the ages of the participants were all above 18. The mean age of the participants was 21.49 (standard deviation=2.17) and

the range was from 18 to 31; 312 of them were males (40.3%) and 463 of them were females (59.7%).

Data Collection Tools

A short demographic information form including questions about age, gender, and grade level; and original item pools (finalized application form) were given to the participants.

Procedure

Original item pools for each scale were created by the author according to the current literature (1,3,8,15,16,20): 23 items for assertiveness, 20 items for passivity, and 21 items for aggressivity. Three psychological counselors, two clinical psychologists, and two psychiatrists evaluated items for content validity. Lawshe’s content validity ratio was used. Agreement levels for each item were above 50%. Domain definition, domain representation, and domain relevance were used as the evaluation criteria for content validity. Accordingly, seven items were deleted, six items were revised, and nine items were added by the evaluators. Based on these expert opinions, the revised item pools included 66 items in total. A 5-point Likert grading was preferred for rating as never, rarely, sometimes, often, and always. A pilot study for language validity was conducted with 32 students from the same faculty as an independent group in advance. There was no language comprehension problem.

The finalized application form was filled in by 782 students. However, 27 forms were excluded due to suspected duplication or careless responding. To examine test-retest reliability, the same application form was given again to a subgroup of the sample (n=38) after 4 weeks. There is no reverse scoring for any scale in this study. Higher scores indicate higher levels of measured constructs in all scales. Each of assertiveness, passivity, and aggressivity scales provides a total score. Items and scoring criteria can be found in the Appendix. Since both passivity and aggressivity are inversely related to assertiveness, their scores are expected to be opposite, such as if assertiveness is high, other two should be low. To attain multidimensional assertiveness score, passivity, and aggressivity total scores should be subtracted from assertiveness score.

Statistical Analyses

After verifying the required statistical assumptions, such as adequate sample size, normality, reasonably high correlations, no multicollinearity, both exploratory and confirmatory factor analyzes (EFA and CFA) were applied for construct validity. Since data were normally distributed, Pearson correlations were used for reliability and validity analyses. Data were randomly divided into two groups for EFA (n=423) and CFA (n=332). IBM SPSS v.25 and AMOS v.24 (Chicago, Illinois, USA) were utilized, and the significance level of the analyses was accepted $p < 0.01$ at least.

Results

No data was missing. Collected data in this study were suitable for factor analyses. Kaiser-Meyer-Olkin sampling adequacy

coefficients were above 0.888 and Bartlett’s tests of sphericity were all significant. Normality of item and factor scores were verified by Kolmogorov Smirnov test and the distributions were not significantly different from the normal. In EFA, the extraction method was principal component analysis and the rotation method was oblimin with Kaiser normalization due to moderate to high-level correlations between items. In CFA, maximum likelihood was the estimation method. Stratified α -values were reported for multidimensional scales.

ASS

Validity

In EFA (n=423), eight items that were not correlated significantly with others could not form adequate factor loadings, and deleted from analysis step by step. Finally, five items were clustered in each factor. A three-factor structure with 15 items was explained by EFA and 67.1% of the variance was explained by these three components (Table 1). The most dominant factor in explained variance (36.33%) was named as Kindness (K), the second factor (17.48%) was taken the name of Calmness (C), and Openness (O) was the name given to the third factor (13.29%).

In CFA (n=332), item factor loadings varied between 0.49 and 0.90; data fit was very suitable (comparative fit index (CFI)=0.95, Tucker–Lewis index (TLI)=0.94, standardized root mean square residual (SRMR)=0.046, root mean square error of approximation (RMSEA)=0.039, $\chi^2/df=1.142$) (Fig. 1). No modification was required due to low covariances. The av-

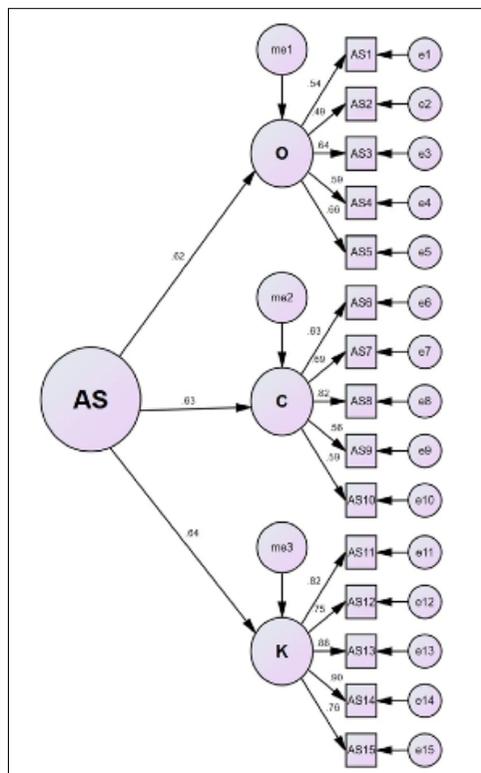


Figure 1. Standardized factor loadings in Aggressivity Scale measurement model according to confirmatory factor analysis.

Table 1. ASS component score coefficient matrix after rotation in EFA (n=423)

I	Statement	M (SD)	Factor loadings		
			KS	CS	OS
1	I express my thoughts sincerely.	3.66 (0.81)	0.030	0.090	0.615
2	I like to share my happiness with others.	3.18 (0.94)	0.171	0.135	0.578
3	When feeling sad, I share it with my relatives.	2.79 (0.86)	0.145	0.118	0.598
4	I prefer face-to-face meeting over texting.	2.64 (0.68)	0.152	0.004	0.632
5	I can easily ask something I do not understand.	2.96 (0.86)	0.137	0.038	0.797
6	I try to placate the discussion, rather than bystander.	3.03 (0.77)	0.048	0.705	0.070
7	I can control my anger when I am treated unfairly.	2.76 (0.75)	0.119	0.717	0.079
8	I calmly refuse the unreasonable requests of others.	2.75 (0.71)	0.244	0.680	0.084
9	I patiently listen to people who do not think like me.	2.57 (0.67)	0.183	0.763	0.123
10	I approach inexperienced people with understanding.	2.83 (0.68)	0.075	0.791	0.093
11	When I need something, I kindly ask for it.	3.25 (1.09)	0.826	0.058	0.009
12	I politely warn when I see any misbehavior.	2.92 (1.03)	0.838	0.033	0.036
13	I take care not to disturb others while doing a job.	2.83 (0.88)	0.794	0.085	0.050
14	Before sitting next to others, I would ask permission.	2.92 (0.97)	0.759	0.002	0.030
15	I allow others to express themselves freely.	3.04 (0.91)	0.819	0.042	0.036
Eigenvalue			5.449	2.620	1.993
Variance explained (%)			36.33	17.48	13.29
Cronbach's α			0.845	0.821	0.793
Test-retest reliability (r) (p<0.01)			0.784	0.789	0.757

I: Items, ASS Subscales: KS=Kindness Scale, CS=Calmness Scale, OS=Openness Scale
 For ASS: Assertiveness Scale, Explained total variance=67.1%, Stratified α=0.866, Test-retest r=0.774 (p<0.01), EFA: Explanatory factor analysis, M: Mean, SD: Standard deviation.

Table 2. Intercorrelation matrix of ASS items according to CFA (n=332)

	OS					CS					KS				
I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	0.360	0.339	0.402	0.368	0.120	0.187	0.230	0.227	0.098	0.211	0.160	0.202	0.183	0.164	
2	1	0.336	0.235	0.203	0.159	0.314	0.146	0.201	0.087	0.258	0.259	0.225	0.236	0.268	
3		1	0.461	0.370	0.017	0.177	0.246	0.080	0.092	0.387	0.444	0.352	0.389	0.416	
4			1	0.838	0.095	0.204	0.248	0.205	0.095	0.096	0.122	0.103	0.097	0.112	
5				1	0.096	0.150	0.219	0.148	0.093	0.106	0.125	0.107	0.105	0.126	
6					1	0.446	0.560	0.279	0.359	0.184	0.136	0.182	0.158	0.139	
7						1	0.500	0.528	0.388	0.304	0.239	0.299	0.251	0.230	
8							1	0.400	0.457	0.380	0.369	0.379	0.375	0.337	
9								1	0.547	0.095	0.096	0.090	0.100	0.101	
10									1	0.108	0.094	0.128	0.077	0.091	
11										1	0.708	0.719	0.691	0.678	
12											1	0.653	0.658	0.652	
13												1	0.638	0.721	
14													1	0.549	
15														1	

I: Items in ASS. All correlations are significant at the level of p<01; ASS: Assertiveness Scale Subscales; OS: Openness Scale; CS: Calmness Scale; KS: Kindness Scale; CFA: Confirmatory factor analysis.

Table 3. PAS component score coefficient matrix after rotation in EFA (n=423)

I	Statement	M (SD)	Factor Loadings		
			ES	SS	IS
1	I have difficulty in expressing my thoughts.	2.62 (1.16)	0.210	0.257	0.656
2	I have difficulty in expressing my emotions.	2.78 (1.41)	0.236	0.260	0.772
3	I do not want to communicate whom I do not know.	2.55 (1.15)	0.189	0.167	0.710
4	I avoid getting any social attention.	2.86 (1.47)	0.188	0.140	0.711
5	I want to be the listener, not the talker in chats.	2.20 (1.32)	0.230	0.258	0.513
6	If one passes me when waiting in line, I stay silent.	2.22 (1.19)	0.078	0.721	0.223
7	I shut up if priority is given to someone who comes later than me.	2.16 (1.14)	0.058	0.764	0.148
8	If anyone bothers me while I'm working, I put up with it.	2.24 (1.17)	0.247	0.617	0.065
9	I have hard time returning a defective or missing product.	1.87 (1.16)	0.275	0.520	0.136
10	I cannot warn who makes noise in the cinema or theatre.	1.92 (1.06)	0.178	0.723	0.232
11	I cannot claim my borrowed item back.	3.42 (1.56)	0.812	0.093	0.135
12	I cannot ask for the money back that I lent.	3.65 (1.69)	0.764	0.120	0.136
13	Asking someone for help is difficult for me.	2.68 (1.42)	0.470	0.154	0.210
14	I go downhill when I'm criticized.	3.03 (1.35)	0.606	0.193	0.108
15	I do not know what to say when I'm appreciated.	2.88 (1.48)	0.493	0.192	0.241
	Eigenvalue		2.281	2.371	5.153
	Variance explained (%)		17.46	23.29	36.32
	Cronbach's α		0.795	0.806	0.849
	Test-retest reliability (r) (p<0.01)		0.808	0.819	0.827

I: Items; PAS Subscales: ES: Embarrassment Scale; SS: Shyness Scale; IS: Introversion Scale. For PAS: Passivity Scale, Explained total variance=77.37%, stratified $\alpha=0.895$, test-retest $r=0.823$ (p<0.01), EFA: Explanatory factor analysis; M: Mean, SD: Standard deviation

erage variance explained (AVE) was 0.655. Intercorrelations between items were all found significant at 0.01 level (Table 2). Correlations between factor structures were calculated as 0.411 (C-O), 0.427 (C-K), and 0.436 (O-K) (p<0.01). Correlations between assertiveness (AS) and O, C, K constructs were respectively 0.734, 0.755, and 0.769 (p<0.01) on CFA. The scale structure was confirmed by CFA.

Reliability

The reliability coefficients of scale scores for this study were confirmed above 0.70 as the critical value of Cronbach α internal consistency coefficient. Cronbach α coefficients were 0.866 (ASS), 0.845 (Kindness scale [KS]), 0.821 (calmness scale [CS]), and 0.793 (openness scale [OS]). Composite reliability (CR) for ASS was 0.878. The test-retest reliabilities (r) were all above 0.500 (p<0.01): 0.774 (ASS), 0.784 (KS), 0.789 (CS), and 0.757 (OS). Accordingly, these scales can yield reliable results both consistently and repeatedly.

PAS

Validity

In EFA (n=423), five items did not correlate significantly with others and were not able to compose adequate factor loadings and deleted from analysis step by step. Finally, five items were clustered in each factor. A three-factor structure with 15 items was explained by EFA and 77.37% of the variance was

explained by these three components (Table 3). The most dominant factor in explained variance (36.32%) was named as Introversion (I), the second factor (23.29%) was given the name of Shyness (S), and Embarrassment (E) was the name assigned to the third factor (17.46%).

In CFA (n=332), the factor loadings of items were between 0.51 and 0.74; data-model fit was very suitable (CFI=0.96, TLI=0.91, SRMR=0.036, RMSEA=0.029, $\chi^2/df=1.013$) (Fig. 2). For this fitness, one modification was required between the error terms of items 11 and 12 (0.44). AVE was calculated as 0.729. All intercorrelations between items were found significant at 0.01 level (Table 4). Correlations among factor structures were calculated as 0.472 (I-S), 0.465 (I-E), and 0.541 (E-S) (p<0.01). Correlations between passivity (P) and I, S, E constructs were respectively 0.727, 0.741, and 0.723 (p<0.01) on CFA. Thus, CFA confirmed the scale structure.

Reliability

Cronbach α coefficients were 0.895 (PAS), 0.849 (introversion scale [IS]), 0.806 (shyness scale [SS]), and 0.795 (embarrassment scale [ES]). CR for PAS was calculated as 0.903. The test-retest reliabilities (r) were all above 0.500 (p<0.001): 0.823 (PAS), 0.827 (IS), 0.819 (SS), and 0.808 (ES). Accordingly, PAS and its subscales can yield consistently and repeatedly reliable results.

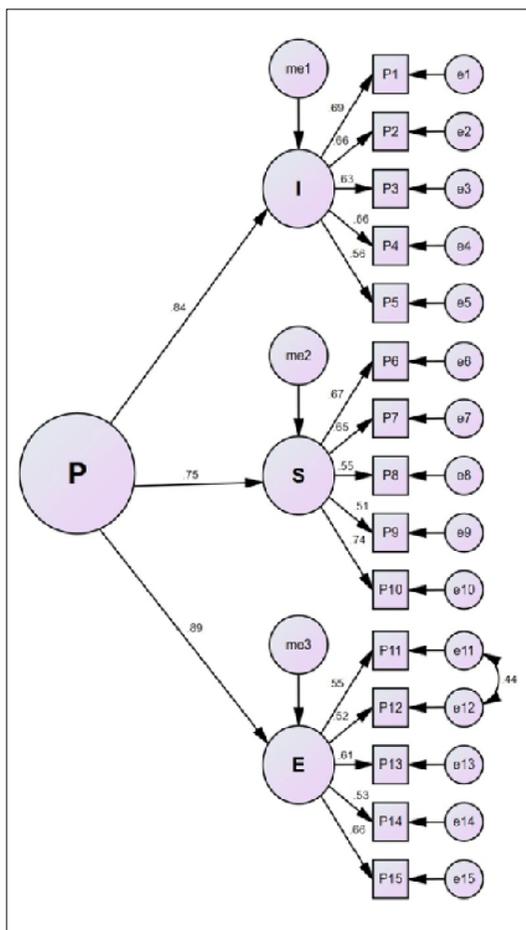


Figure 2. Standardized factor loadings in Passivity Scale measurement model according to confirmatory factor analyzes

Aggressivity Scale

Validity

Six items did not correlate significantly with others and did fail to compose adequate factor loadings and deleted from analysis step by step in EFA. Five items were clustered finally in each factor. A three-factor structure with 15 items was explained by EFA and 69.45% of the variance was explained by these three factors (Table 5). The most variance explained (32.79%) by the factor named as Furiousness (F), Unfairness (U) was given name of the second factor (20.13%), and the last factor named as Brutality (B) with the least variance (16.53%).

In CFA (n=332), the factor loadings were between 0.51 and 0.74; data-model fit was highly suitable (CFI=0.92, TLI=0.90, SRMR=0.048, RMSEA=0.057, $\chi^2/df=1.239$) (Fig. 3). To adjust this data-fit, one modification was needed between the error terms of items 11 and 12 (0.39). AVE was 0.682. All inter-item correlations were statistically significant at 0.01 level (Table 6). Correlations between factor structures were calculated as 0.454 (B-U), 0.472 (B-F), and 0.493 (U-F) ($p<0.01$). Correlations between aggressivity (AG) and B, U, F constructs were respectively 0.719, 0.711, and 0.752 ($p<0.01$) on CFA. Thus, CFA confirmed the structure of the AGS.

Reliability

Cronbach α coefficients were 0.883 (AGS), 0.801 (furiousness scale [FS]), 0.768 (unfairness scale [US]), and 0.735 (brutality scale [BS]). CR for AGS was 0.897. The test-retest reliabilities (r) were all above 0.500 ($p<0.01$): 0.610 (AGS), 0.608 (FS), 0.589 (US), and 0.627 (BS). Hence, consistently and repeatedly reliable results can be gathered by AGS and its subscales.

Table 4. Intercorrelation matrix of PAS items according to CFA (n=332)

		IS					SS					ES				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1	0.487	0.455	0.404	0.354	0.299	0.274	0.276	0.265	0.393	0.289	0.272	0.319	0.293	0.352		
2	1	0.453	0.471	0.301	0.304	0.255	0.163	0.214	0.288	0.224	0.225	0.237	0.150	0.310		
3		1	0.406	0.302	0.258	0.189	0.179	0.159	0.260	0.253	0.236	0.301	0.279	0.304		
4			1	0.418	0.264	0.232	0.235	0.243	0.275	0.248	0.312	0.301	0.167	0.389		
5				1	0.283	0.275	0.206	0.294	0.297	0.269	0.243	0.337	0.185	0.365		
6					1	0.468	0.366	0.314	0.507	0.233	0.239	0.221	0.209	0.241		
7						1	0.368	0.329	0.481	0.152	0.224	0.258	0.218	0.235		
8							1	0.283	0.377	0.203	0.281	0.273	0.227	0.273		
9								1	0.363	0.319	0.219	0.252	0.176	0.293		
10									1	0.263	0.231	0.350	0.302	0.303		
11										1	0.501	0.342	0.353	0.344		
12											1	0.272	0.325	0.333		
13												1	0.316	0.399		
14													1	0.338		
15														1		

I: Item numbers in PAS. All correlations are significant at the level of $p<0.01$. Subscales of PAS: Passivity Scale; IS: Introversion Scale; SS: Shyness Scale; ES: Embarrassment Scale; "PAS: Passivity Scale; CFA: Confirmatory factor analysis.

Table 5. AGS component score coefficient matrix after rotation in EFA (n=423)

I	Statement	M (SD)	Factor Loadings		
			FS	US	BS
1	I mistreat anyone who opposes my wishes.	2.48 (1.07)	0.254	0.221	0.529
2	I enjoy punishing someone who does wrong.	2.61 (1.33)	0.116	0.172	0.608
3	I will make people who hurt me pay a heavy price.	2.37 (1.04)	0.345	0.144	0.679
4	I achieve my goals even if I have to offend others.	2.64 (1.36)	0.105	0.217	0.621
5	Catching someone's deficit, I use them as leverage.	2.09 (1.29)	0.111	0.192	0.648
6	If they resist, I force others to do what I want.	2.03 (1.09)	0.138	0.640	0.152
7	I make decisions for others without asking them.	2.05 (1.07)	0.015	0.694	0.257
8	I know how to justify myself when I'm wrong.	2.14 (1.13)	0.075	0.517	0.407
9	When I fail, I put the blame on others.	1.82 (1.21)	0.298	0.627	0.164
10	I interrupt someone else's speech to talk more.	1.76 (0.93)	0.052	0.659	0.204
11	In situations I do not like, I get angry immediately.	2.44 (1.56)	0.724	0.067	0.171
12	I get irritated when fail to deal with problems.	2.63 (1.66)	0.552	0.265	0.050
13	If I'm compelled to do something, I become mad.	2.51 (1.33)	0.704	0.063	0.193
14	When I am angry, I lose control of myself.	2.93 (1.38)	0.802	0.034	0.111
15	When I am angry, I swear to humiliate others.	2.79 (1.19)	0.504	0.264	0.271
Eigenvalue			4.918	2.519	1.979
Variance explained (%)			32.79	20.13	16.53
Cronbach's α			0.801	0.768	0.735
Test-retest reliability (r) (p<001)			0.608	0.589	0.627

I: Items, AGS Subscales: FS: Furiousness Scale; US: Unfairness Scale; BS: Brutality Scale. For AGS: Aggressivity Scale; Explained total variance=69.45%; stratified $\alpha=0.883$; test-retest $r=0.610$ ($p<0.01$); EFA: Explanatory factor analysis; SD: Standard deviation.

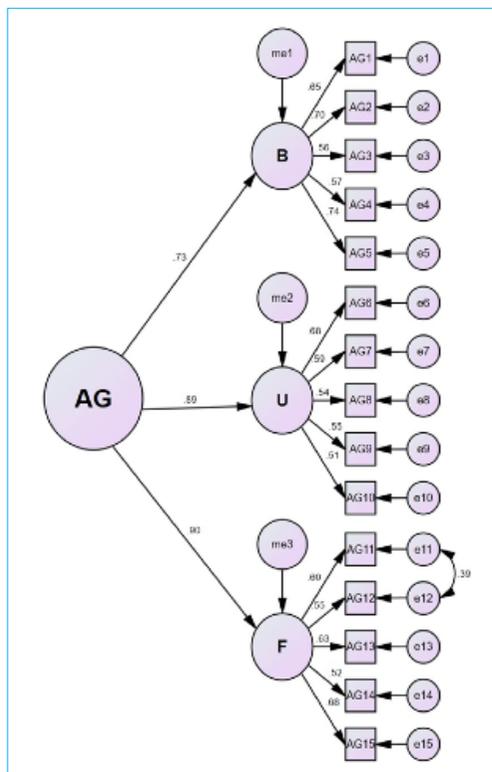


Figure 3. Standardized factor loadings in aggressivity scale measurement model according to confirmatory factor analyses

Relationships between Scale and Subscale Scores

ASS and PAS

Assertiveness and passivity scores were inversely related to each other as indicated by Pearson correlations ($r=-0.425$, $p<0.01$). Score distributions on histograms as well as central tendency measures showed that items in ASS were negatively skewed as opposed to PAS items (Tables 1 and 3). Correlations between O, C, K (ASS) and I, S, E (PAS) subscales were all negative between -0.092 (C-E) and -0.238 (O-I) ($p<0.01$). As evident from the correlation coefficients, relationships between ASS and I, S, E were -0.201 , -0.216 , -0.236 ; and between PAS and O, C, K were -0.314 , -0.214 , -0.120 , respectively ($p<0.01$). The strongest relationship among them is between total passivity and openness, and the weakest but still significant one is between calmness and embarrassment.

ASS and AGS

Assertiveness and aggressivity scores were inversely related to each other as well ($r=-0.543$, $p<0.01$). Central tendency measures and distributions of scores showed that items in ASS were more negatively skewed in comparison to AGS items (Table 1 and 5). Correlations between O, C, K (ASS) and B, U, F (AGS) subscales were all negative between -0.198 (O-U) and -0.565 (C-F) ($p<0.01$). Relationships between ASS and B, U, F were -0.332 , -0.335 , -0.385 ; and between AGS and O, C, K were -0.349 , -0.487 , -0.512 , respectively ($p<0.01$).

Table 6. Intercorrelation matrix of AGS items according to CFA (n=332)

	BS					US					FS				
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	0.228	0.456	0.300	0.303	0.287	0.314	0.235	0.286	0.222	0.269	0.300	0.216	0.228	0.315	
2	1	0.376	0.325	0.244	0.248	0.281	0.312	0.240	0.246	0.209	0.207	0.212	0.217	0.212	
3		1	0.341	0.382	0.269	0.258	0.351	0.350	0.296	0.360	0.283	0.372	0.294	0.330	
4			1	0.325	0.241	0.322	0.250	0.327	0.236	0.173	0.222	0.198	0.215	0.283	
5				1	0.217	0.270	0.377	0.229	0.280	0.223	0.271	0.244	0.141	0.278	
6					1	0.358	0.331	0.332	0.301	0.135	0.288	0.241	0.147	0.258	
7						1	0.352	0.412	0.367	0.169	0.280	0.100	0.144	0.212	
8							1	0.321	0.363	0.181	0.280	0.155	0.194	0.285	
9								1	0.349	0.273	0.351	0.277	0.225	0.339	
10									1	0.141	0.290	0.178	0.117	0.216	
11										1	0.390	0.351	0.496	0.321	
12											1	0.315	0.365	0.340	
13												1	0.503	0.341	
14													1	0.343	
15														1	

I: Items in AGS. All correlations are significant at the level of $p < 0.01$. AGS: Aggressivity Scale subscales; BS: Brutality Scale; US: Unfairness Scale; FS: Furiousness Scale; CFA: Confirmatory factor analysis.

PAS and AGS

Passivity and aggressivity scores were inversely related to each other as indicated by Pearson correlations ($r = -0.652$, $p < 0.01$). Comparison of the score distributions showed that items in PAS and AGS were skewed in opposite directions (Tables 3 and 5). Correlations between I, S, E (PAS) and B, U, F (AGS) subscales were all negative between -0.369 (F-I) and -0.632 (B-E) ($p < 0.01$). Relationships between PAS and B, U, F were -0.513 , -0.524 , -0.541 ; and between AGS and I, S, E were -0.558 , -0.528 , -0.556 , respectively ($p < 0.01$).

Discussion

The measurement models of ASS, PAS, AGS, and their nine subscales were well explained and confirmed by factor analyses. More than two-thirds of variances were explained by the models and the second-order CFAs indicated well-established data and model accordance as indicated by diverse fit indices. According to the results, all measurement models and their sub-dimensions can yield reliable results. In addition, the relationships between constructs measured by all scales and subscales were related to each other significantly and as expected based on the literature review.

It has been known for several decades that individuals can behave assertively, passively, aggressively, or passive aggressively in their interpersonal relationships; and these behavioral patterns affect decision-making and personality structure.^[22] In fact, assertiveness was found highly related to openness in the big five personality domains; while extraversion was associated with aggression, neuroticism was connected to passive behaviors.^[23] For example, shyness and embarrassment

are affective qualities typically associated with neuroticism. On the other hand, one of the strongest inverse relationships was between calmness and furiousness in this study. Anger can take the form of fury in aggressive people and following that lower levels of assertiveness decrease cognitive flexibility; then, people become more unjust and crueler^[24] as a result. The findings of the current study about strong inverse relationships between assertiveness (kindness, openness, and calmness) and aggressivity (brutality, unfairness, and furiousness) prove these relationships.

There are many application areas of assertiveness and related psychological constructs. For example, assertiveness psychoeducation programs were found effective against aggressive behaviors of the perpetrators and passive behaviors of victimized students to decrease bullying in schools.^[25] In organizations, narcissistic and antisocial behaviors can be controlled while strengthening interpersonal relationships of asocial behaviors in less communicative workers by assertiveness training.^[26] However, it should be kept in mind that over-assertiveness can also be a risk factor for productivity, some social distancing can also be taught for boundary setting like being able to say "No!" to others in a truly assertive manner.^[27] Some introversion and furiousness can help people to set healthy boundaries.^[28] Social competences require a dynamic balance between assertive, aggressive, and passive behaviors in interpersonal communication. There is no absolute zero for any of them but comparative balancing of contrasts depending on the situations. By applying assertiveness, passivity, and aggressivity scales all together for assessment, the profiles for individuals can be drawn to see their contrasts. Future studies can be designed to compare different profiles to set detailed

and comprehensive evaluation standards.

Assertiveness skill development programs have been implemented in correctional facilities and their program effectiveness was increased by adding modules for controlling aggression and decreasing passive behaviors through empowering social interactions between incarcerated individuals.^[29] Assertive skills can be transferred by different methods like rational emotive behavior therapy or some constructivist approaches like dramatherapy or narrative therapy techniques.^[30] Assertiveness training is also significant for medical and nursing students. There seems to present more space for assertiveness in nursing with respect to medical education. Assertiveness should take more place in medical education for increasing psychological resilience and contributing to the recovery of patients. For example, assertiveness training increases the self-esteem of university students.^[31] There are some recent research about assertiveness trainings indicating positive outcomes in Türkiye^[32,33] and from other countries.^[34,35] Assertiveness, passivity, and aggressivity scales developed in this study can be used to assess pre- and post-training levels. Assessment results can be used for improvements in new intervention programs.

Limitations and Strengths of the Study

There are some limitations of this study. First, it was carried out in a single setting. It should be replicated in different settings with other populations from different demographics to increase external validity. Second, the data were collected only through online forms due to the COVID-19 pandemic conditions. In the future, different data collection methods, especially face-to-face application can be used to test scale validities and reliabilities to see any changes in the scale structures. Third, all scales are self-report instruments, which may reflect some failed self-perception. This type of measurement errors decreases scale reliability. Therefore, multi-source assessment is required for future reference.

One major strength of the study is item originality. In other words, the items are based on the current literature of assertiveness and a diverse group of expert opinions from the field. Another strength is the relative shortness of the scales for their practical use. Moreover, no reverse scoring was used in this scale as opposed to older and adapted foreign culture-based assertiveness scales available, such as Rathus assertiveness scale. Furthermore, the multidimensional structure of scales can permit to compare the weaknesses and strengths between assertiveness, passivity, aggressivity, and their subdimensions to develop appropriate education, and other interventions, and future research.

Conclusion

It is important to measure and evaluate assertiveness and its related psychological constructs validly and reliably from multidimensional perspectives. Assertiveness, passivity, and aggressivity scales were developed for this purpose. Based on

the findings of the present study, they can measure openness, calmness, kindness, introversion, shyness, embarrassment, brutality, unfairness, and furiousness dimensions from comparative directions. Scales were found satisfactorily valid and reliable, and they can be used for the purposes of research and assessment. In the future, scales and subscales can be applied to diverse adult populations. Therefore, psychometric properties of the measures can be repeatedly tested according to these new results.

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Appendix:**Items in Assertiveness, Passivity, and Aggressivity Scales and Scoring**

Assertiveness Scale: There are 15 items in this scale. Please rate each item with the most appropriate number for you from 1 to 5 according to the rating. Thanks for your truthful answers.

		Never	Rarely	Sometimes	Often	Always
1	I express my thoughts sincerely.	1	2	3	4	5
2	I like to share my happiness with others.	1	2	3	4	5
3	When feeling sad, I share it with my relatives.	1	2	3	4	5
4	I prefer face-to-face meeting over texting with my friends.	1	2	3	4	5
5	I can easily ask something I do not understand.	1	2	3	4	5
6	I try to placate the discussion, rather than being a bystander.	1	2	3	4	5
7	I can control my anger when I am treated unfairly.	1	2	3	4	5
8	I calmly refuse the unreasonable requests of others.	1	2	3	4	5
9	I patiently listen to people who don't think like me.	1	2	3	4	5
10	I approach inexperienced people with understanding.	1	2	3	4	5
11	When I need something, I kindly ask for it.	1	2	3	4	5
12	I politely warn when I see any misbehavior.	1	2	3	4	5
13	I take care not to disturb others while doing a job.	1	2	3	4	5
14	Before sitting next to someone, I would ask permission.	1	2	3	4	5
15	I allow others to express themselves freely.	1	2	3	4	5

Scoring: No reverse scoring in this scale. For subscales: Item numbers 1–5=Openness score; items 6–10=Calmness score; items 11–15=Kindness score. The scale also yields a total assertiveness score. Minimum total score:15 and maximum total score:45.

PAS: There are 15 items in this scale. Please rate each item with the most appropriate number for you from 1 to 5 according to the rating. Thanks for your truthful answers.

		Never	Rarely	Sometimes	Often	Always
1	I have difficulty in expressing my thoughts.	1	2	3	4	5
2	I have difficulty in expressing my emotions.	1	2	3	4	5
3	I do not want to communicate whom I do not know.	1	2	3	4	5
4	I avoid getting any social attention.	1	2	3	4	5
5	I want to be the listener, not the talker in chats.	1	2	3	4	5
6	If one passes me when waiting in line, I stay silent.	1	2	3	4	5
7	I shut up if priority is given to someone who comes later than me.	1	2	3	4	5
8	If anyone bothers me while I'm working, I put up with it.	1	2	3	4	5
9	I have hard time returning a defective or missing product.	1	2	3	4	5
10	I cannot warn who makes noise in the cinema or theatre.	1	2	3	4	5
11	I cannot claim my borrowed items back.	1	2	3	4	5
12	I cannot ask for the money back that I lent.	1	2	3	4	5
13	Asking someone for help is difficult for me.	1	2	3	4	5
14	I go downhill when I'm criticized.	1	2	3	4	5
15	I do not know what to say when I'm appreciated.	1	2	3	4	5

Scoring: No reverse scoring in this scale. For subscales: Item numbers 1–5=Introversion score; items 6–10=Shyness score; items 11–15=Embarrassment score. The scale also yields a total passivity score. Minimum total score:15 and maximum total score:45.

Aggressivity Scale: There are 15 items in this scale. Please rate each item with the most appropriate number for you from 1 to 5 according to the rating. Thanks for your truthful answers.

	Never	Rarely	Sometimes	Often	Always
1 I mistreat anyone who opposes my wishes.	1	2	3	4	5
2 I enjoy punishing someone who does wrong.	1	2	3	4	5
3 I will make people who hurt me pay a heavy price.	1	2	3	4	5
4 I achieve my goals even if I have to offend others.	1	2	3	4	5
5 Catching someone's deficit, I use them as leverage.	1	2	3	4	5
6 If they resist, I force others to do what I want.	1	2	3	4	5
7 I make decisions for others without asking them.	1	2	3	4	5
8 I know how to justify myself when I'm wrong.	1	2	3	4	5
9 When I fail, I put the blame on others.	1	2	3	4	5
10 I interrupt someone else's speech to speak myself more.	1	2	3	4	5
11 In situations I do not like, I get angry immediately.	1	2	3	4	5
12 I get irritated when fail to deal with problems.	1	2	3	4	5
13 If I'm compelled to do something, I become mad.	1	2	3	4	5
14 When I am angry, I lose control of myself.	1	2	3	4	5
15 When I am angry, I swear to humiliate others.	1	2	3	4	5

Scoring: No reverse scoring in this scale. For subscales: Item numbers 1–5=Brutality score; items 6–10=Unfairness Scale (US) score; items 11–15=Furiousness Scale (ES) score. The scale also yields a total aggressivity score. Minimum total score:15 and maximum total score:45.