

Evaluating the psychometric properties of the Autism Stigma and Knowledge Questionnaire (ASK-Q) among Greek mental health professionals: an exploratory study

Angelos Papadopoulos ^{1,2*}, Dionysios Tafiadis ³, Angeliki Tsapara ^{1,4}, Maria Chaniotaki ¹, Louiza Voniati ⁵, Alexandra Prentza ⁶, Lefteris Papadopoulos ⁷, Nikolaos Trimmis ^{1,4}, Panagiotis Plotas ^{1,4} and Vassiliki Siafaka ³

¹ Department of Speech and Language Therapy, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece.

² School of Humanities and Social Sciences, University of Patras, Greece.

³ Department of Speech and Language Therapy, School of Health Sciences, University of Ioannina, Ioannina, Greece.

⁴ Laboratory of Primary Health Care, School of Health Rehabilitation Sciences, University of Patras, Patras, Greece.

⁵ Department of Health Sciences, Speech and Language Therapy, European University, Nicosia, Cyprus.

⁶ Department of Linguistics, School of Philology, Faculty of Philosophy, University of Ioannina, Greece.

⁷ Special Intervention Center "Enavsma", Kilkis, Greece.

* Correspondence: angelospapadopoulos@gmail.com; Tel.: +30 6949983338

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Abstract: Accurate knowledge about autism spectrum disorder (ASD), whether it is for children or adults, is necessary for healthcare professionals to address the increased needs of this population and decrease the disparities in the services provided. The study aims to adapt the Autism Stigma and Knowledge Questionnaire (ASK-Q) into Greek among mental health professionals (MHP), such as speech therapists, psychiatrists, and the general population (GP). The translated version was administered to 73 MHP and 140 GP according to the Scientific Advisory Committee of the Medical Outcomes Trust guidelines. Findings revealed that MHP had adequate knowledge of autism and did not endorse the stigma of autism. Statistically significant differences were indicated in ASK-Q subdomains between MHP and the GP and its four structural factors. The internal consistency was acceptable ($\alpha=0.646$). The ROC analysis computed to determine the cut-off points of the ASK-Q four domains returned a result of 39.00 with a sensitivity of 0.616 and 1-specificity of 0.150. The proposed version of the ASK-Q has good psychometric properties and is valid and reliable for assessing the knowledge and stigma beliefs associated with autism among mental health professionals.

Keywords: Autism Stigma and Knowledge Questionnaire (ASK-Q); Mental health professionals; Children and adults with ASD; Psychometric properties; ROC analysis; Speech therapists; Psychiatrists; Nurses.

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1.0 INTRODUCTION

Autism spectrum disorder (ASD) has been identified as the most common neurological disorder affecting children and one of the most prevalent developmental disabilities ([Leblanc et al., 2009](#)). ASD is estimated to affect up to 3% of children in the United States ([Christensen et al., 2019](#)). According to the Autism and Developmental Disabilities Monitoring Network of the Centers for Disease Control and Prevention, approximately 1 in 68 children were diagnosed with ASD in 2012 ([Christensen et al., 2016](#)). Recently, the Centers for Disease Control and Prevention (CDC) suggests that the overall ASD prevalence was 27.6 per 1,000 (one in 36) children aged 8 years and was 3.8 times as prevalent among boys as among girls (43.0 versus 11.4) ([Maenner et al., 2023](#)). Furthermore, two recent studies ([Kouznetsov et al., 2023](#); [Thomaidis et al., 2020](#)) about the prevalence of ASD were held in Greece. The first study ([Thomaidis et al., 2020](#)) indicated that the overall ASD prevalence was 1.15% (1.83% males, 0.44% females; ratio 4.14:1), ranging from 0.59% to 1.50%, while the second study ([Kouznetsov et al., 2023](#)) also suggests that the prevalence of autism spectrum disorder seems to be 1 in 100 children with boys being estimated to be diagnosed with ASD 3.5 times more often than girls. Individuals with ASD present impaired verbal and non-verbal social communication and interaction, as well as restrictive or repetitive interests, behaviours or movements that affect their caregivers ([Papadopoulos et al., 2023b](#)) and whole family ([American Psychiatric Association & Association, 2013](#); [Papadopoulos et al., 2023a](#); [Thomaidis et al., 2020](#)). Children with autism need continuous intervention with various treatments developed and implemented with evidence-based practice ([Hume et al., 2021](#); [Myers et al., 2007](#); [Papadopoulos et al., 2023c](#)).

There is variation in ASD knowledge across the general population ([Harrison et al., 2017](#)). College students in Eastern countries have inaccurate and/or insufficient knowledge about ASD ([Obeid et al., 2015](#); [Someki et al., 2018](#)). It is worth mentioning that in Arab countries, parents tended to rely on cultural interventions involving religious healers, or they attributed ASD to vaccines or the "evil eye," ([Obeid et al., 2015](#)). Moreover, there are misconceptions among Japanese students that autism is not a lifelong condition and can be outgrown with the right treatment, that people with autism have low intelligence and limited empathy, and that autism cannot be diagnosed in toddlers ([Someki et al., 2018](#)). On the other hand, in Indonesia ([Handayani & Paramita, 2020](#)), parents and professionals in the sample had adequate knowledge of autism and did not

endorse the stigma associated with the disorder. In addition, among university students in the USA, the results fell within the normal range, which indicated a high prevalence of adequate knowledge and a low frequency of stigma beliefs ([Reckard, 2021](#)). Over time, there seems to be an improvement in the general public's knowledge of autism ([Bakare et al., 2008](#); [Dillenburger et al., 2015](#); [White et al., 2019](#)).

Furthermore, in Western countries, the general population's knowledge about ASD is moderate to high. In Greece, it has been found that the majority of the population had a very good knowledge of issues relevant to autism, especially women. In contrast, this knowledge has been associated with education, income, and the existence of a person with ASD in the environment ([Kouznetsov & Jelastopulu, 2023](#)). In Northern Ireland, a study assessed autism awareness, knowledge about autism, and perceptions about autism interventions and found high levels of autism awareness and expertise. Still, the perceptions about autism interventions were not assessed as adequate ([Dillenburger et al., 2013](#)). In 2022, a brief report about the current state of autism knowledge in the general population of the United States revealed that the participants were more knowledgeable about the symptoms and behaviours associated with autism than the aetiology, prevalence, and assessment procedures ([Golson et al., 2022](#)).

Autism misconceptions and misunderstandings can contribute to the exclusion of individuals with ASD, as well as to stereotyping and stigmatising beliefs ([Handayani & Paramita, 2020](#); [Harrison et al., 2017](#); [Obeid et al., 2015](#)). Stereotypes towards those with characteristics that do not suit society's normative expectations frequently result in negative outcomes (low self-esteem and employment difficulties) ([Obeid et al., 2015](#)). It is widely accepted that higher ASD knowledge has also been linked to reduced stigma ([Handayani & Paramita, 2020](#); [Harrison et al., 2017](#), 2019; [Obeid et al., 2015](#); [Someki et al., 2018](#)).

The level of knowledge about autism ([Corden et al., 2022](#); [Jones et al., 2014](#)) among health professionals varies, a result which has been identified as a significant barrier to providing appropriate psychological or therapeutic support to individuals on the spectrum. In addition, the core characteristics of ASD (communication and sensory sensitivity) can complicate medical diagnosis and management of individuals with ASD, posing unique challenges for healthcare professionals who have to provide physical care to

patients with ASD ([Corden et al., 2022](#); [Kong, 2015](#); [Schaaf et al., 2011](#)). This puts people with ASD at risk of not receiving adequate healthcare services ([Corden et al., 2022](#); [Nicolaidis et al., 2013](#); [Sagr et al., 2018](#)). Indeed, children with ASD are significantly more likely than children with comparable emotional, developmental, or behavioural needs to be faced with unmet health and therapy care requirements since providers' lack of skills is reported in the relevant literature as a barrier to obtaining specialist care ([Chiri & Warfield, 2012](#); [Corden et al., 2022](#)). This demonstrates that healthcare professionals in various specialities must have accurate knowledge of autism, which will enhance their self-efficacy to adapt their approach to the specific requirements of each patient ([Corden et al., 2022](#)).

More specifically, mental health professionals interact with individuals with ASD across the lifespan ([Corden et al., 2022](#)). In addition to their role in the diagnosis of autism, mental health professionals are likely to encounter individuals with ASD in their daily practice ([Corden et al., 2022](#)). According to a recent meta-analysis ([Lugo-Marín et al., 2019](#)), the prevalence of psychiatric conditions in adults with autism was found to be between 54.8% and 60.5%.

Knowledge and beliefs about autism were examined among health professionals worldwide (psychiatrists, psychiatric nurses, clinical psychologists, speech/language pathologists, etc.) ([Corden et al., 2022](#); [Crane et al., 2019](#); [Heatherann & Drager, 2008](#); [Heidgerken et al., 2005](#); [Kouznetsov & Jelastopulu, 2023](#); [Nicolaidis et al., 2013](#); [Owalabi Bakari et al., 2009](#); [Stone, 1987](#)). Specifically, the recent review study of Corden et al. in 2022 revealed notable disparities in autism knowledge across different professional backgrounds ([Corden et al., 2022](#)).

Moreover, a recent study in Greece in 2023 about autism attitudes in the general public revealed that among 642 participants, the highest scores were in mental health professionals ([Kouznetsov & Jelastopulu, 2023](#)). However, this study focused on general public autism attitudes. The survey by Crane et al. in 2019 showed that most psychiatrists reported receiving useful training on autism and were knowledgeable about the condition of the disorder, particularly those with a personal connection to autism ([Crane et al., 2019](#)). In addition, higher confidence in working with autistic patients was linked to greater levels of autism knowledge, experience and training ([Crane et al., 2019](#)). Another study found that mental health professionals

exhibited higher levels of fundamental knowledge than specialists such as physicians and neurologists ([Heidgerken et al., 2005](#)). Nurses have been shown to possess sufficient knowledge regarding autism except for comorbidity and onset of ASD ([Corsano et al., 2019](#)). The results indicated that older nurses and those with more experience working in a paediatric hospital or with children with ASD demonstrated more adequate knowledge ([Corsano et al., 2019](#)). Moreover, in a study ([Heatherann & Drager, 2008](#)), it was observed that among speech-language pathologists, most of the participants demonstrated precise understanding regarding the attributes of children with autism. Still, the participants held different views regarding the diagnostic criteria for autism and expressed a need for supplementary training in the field. Noteworthy, most of the studies mentioned above were conducted in the United States of America, a context where information and awareness regarding ASD are extensively widespread. Furthermore, different cultural viewpoints could influence how healthcare professionals view and treat autistic people. For instance, a survey of psychiatric nurses in Nigeria indicated that a sizable number of them believed that curses and demonic possession are among the causes of autism ([Owalabi Bakari et al., 2009](#)). In the most recent study in Greece, general public participants presented moderate knowledge about ASD and mediocre positive attitudes toward people with ASD ([Zarokanellou et al., 2023](#)).

Regarding the research gap in the Greek literature, all prior research in Greece has investigated affiliate stigma ([Papadopoulos et al., 2022](#)) and social stigma ([Veroni & Veroni, 2019](#)) among parents of children with ASD, but there have been only a few studies ([Kouznetsov & Jelastopulu, 2020](#); [Zarokanellou et al., 2023](#)) examining stigma and attitudes toward autism and the targeted sample was among the general population only. To our knowledge, after a literature search, there is not a study that specifically exploited the knowledge and stigma among health professionals compared to the general population, and Greece lacks a standardised questionnaire related to autism knowledge and stigma, focusing on mental health workers.

The aforementioned supports the research gap and the need to investigate knowledge and stigma in mental health professionals with the ultimate goal of implementing interventions to improve the latter and provide better health services for individuals with ASD in Greece. Taking the above into consideration, the current study aims to validate the ASK-Q in Greece, as well as to investigate the adequacy of knowledge

regarding ASD and the existence of stigma beliefs about autism among Greek mental health professionals exclusively for the first time in Greece. Furthermore, there is a greater emphasis on studying the general population rather than professionals in recent research, with a significant portion of the existing literature being dedicated to examining certain subgroups within the general population, including parents, neurotypical peers, and undergraduates ([Golson et al., 2022](#); [Harris et al., 2020](#); [McClain et al., 2019](#)). This study focused on Greek mental health professionals with existing experience in ASD, as they often interact with individuals with ASD in their workplace.

2.0 MATERIALS AND METHODS

The sample was recruited among mental health professionals from Greece after an open invitation to join the study (via posters, emails, social media, and distribution in professional meetings). Specifically, we contacted professional organisations, conferences, and institutional platforms. Regarding the setting, the tool was administered online and in person after the first contact with the professional. As a first step, a pilot study was conducted to ensure consistency and reliability before administering it to mental health professionals. The inclusion criteria were the following: a) age > 18 years old, b) ability to understand and complete the questionnaires, and for the mental health professionals, c) license to work in the field of health or as an allied health professional, d) work experience with ASD individuals. An exclusion criterion for mental health professionals was having a very close relationship with an individual with autism (i.e., having friends or family members with ASD).

In the study, 218 participants fulfilled the criteria for inclusion, 3 individuals chose not to participate, and 2 cases were removed from the analysis due to incomplete data. Before the study, all participants were provided with information regarding the research objective. A written agreement was obtained from each participant, and measures were taken to guarantee their privacy and maintain the confidentiality of the data. The sample of mental health professionals (N=73) included 8 psychiatrists, 17 nurses, 4 occupational therapists, 3 physiotherapists, 15 psychologists, 5 social workers, and 21 speech therapists who work with children and adults with ASD diagnosis. The study was conducted per ethical standards formulated in the World Medical Association Helsinki Declaration ([2002](#)), while the Scientific Committee of Karamandaneio Children's Hospital, Patras, Greece, approved the study (approval number: 19406).

2.1 Instrument, Description of the ASK-Q

The ASK-Q ([Harrison et al., 2017](#)) is comprised of 49 items and a four-factor structure to assess three ASD knowledge subscales of Symptoms/Diagnosis (18 items), Aetiology (16 items), and Treatment (14 items), as well as a fourth subscale of ASD stigma endorsement (7 items) comprised of items also included in one other knowledge subscale. Participants were asked to respond to the statements by selecting “Agree” and “Disagree” ([Handayani & Paramita, 2020](#); [Harrison et al., 2017](#)). Scoring instructions developed by Harrison et al. in 2017 ([Harrison et al., 2017](#)) were used to calculate mean scores for each subscale and compare them with the cut-off scores to determine adequate/inadequate knowledge and stigma endorsement/lack of stigma endorsement. Specifically, the categorisation is as follows: Symptoms/Diagnosis (0–10 inadequate; 11–18 adequate), Aetiology (0–10 inadequate; 11–16 adequate), Treatment (0–9 inadequate; 10–14 adequate), and Stigma (0–2 endorsement of stigma; 3–7 does not endorse stigma). The ASK-Q was initially evaluated using a sample from the United States, demonstrating robust internal consistency. Cut-off points have been set to distinguish persons with sufficient knowledge from those without sufficient information ([Harrison et al., 2017, 2019](#)). The ASK-Q was developed to expand its application to other cultures ([Harrison et al., 2019](#)). In addition, the ASK-Q was translated and validated into different languages (Portuguese) in Brazil ([Handayani & Paramita, 2020](#); [Silva et al., 2022](#)) and Indonesia (Indonesian) ([Handayani & Paramita, 2020](#); [Silva et al., 2022](#)) with good psychometric properties.

2.2 Translation and Adaptation of ASK-Q

The translation and adaptation of the ASK-Q in Greek was carried out according to the guidelines set by the minimal translation criteria from the Scientific Advisory Committee (SAC) of the Medical Outcomes Trust ([Aarons et al., 2002](#)). The minimal translation criteria are outlined: The ASK-Q was entrusted to two proficient English-speaking native speakers with domain expertise. A professional bilingual translator translated the Greek version back into English after its creation. A review of the back-translation as well as cognitive debriefing procedures were conducted. A pilot study was provided with the final version of the ASK-Q.

2.3 Statistical Analysis

The normality distribution of variables was computed using the Kolmogorov-Smirnov and Shapiro-Wilk tests—all variables reported in means (*M*) and standard deviations (*SD*). The Student's t-test was used for the

independent groups. A Receiver Operating Characteristics (ROC) curve analysis was used to estimate the ASK-Q total score's cut-off values and four domains. The cut-off values for the ASK-Q total score and its four subscales were determined using the Youden index. The Cronbach's alpha coefficient and the split-half reliability coefficient technique were used to evaluate the internal consistency of the Greek version of the ASK-Q. All measures were set at a significance of $p < 0.05$ and were two-tailed. The IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM) was used for all statistical analyses.

3.0 RESULTS

The majority of the sample were women, 177 out of 213 (83.10%). Specifically, among the mental health professionals (MHP), there were 61 female participants (83.56%), and among the General public (GP), there were 114 female participants (81.43%). 80.82% of mental health professionals and 79.29% of the General public (GP) fell in the age range of 28-49. Most of the mental health professionals (79.45%) graduated from a university or college. The relevant demographic data is summarised in **Table 1**.

Table 1. Demographics of the sample.

	Mental health professionals (N=73)	General public (N=140)
Gender, N (%)		
Male	12 (16.44)	26 (18.57)
Female	61 (83.56)	114 (81.43)
Age Range, N (%)		
21-27	13 (17.81)	16 (11.43)
28-49	59 (80.82)	111 (79.29)
50+	1 (1.37)	13 (9.29)
Level of Education, N (%)		
High School	13 (17.81)	52 (37.14)
University/College	58 (79.45)	88 (62.86)
MSc/PhD	2 (2.74)	0
Work Status, N (%)		
Economically Inactive	5 (6.85)	50 (35.71)
Freelancer	17 (23.29)	9 (6.43)
Private Employee	20 (27.40)	60 (42.86)
Civil Servant	31 (42.47)	20 (14.29)
Retired	0	1 (0.71)

Regarding the ASK-Q total score and between-group comparisons, the analysis showed significantly higher scores in mental health professionals than in the general public [$t(211)=7.973$, $p<0.001$]. Similarly, statistically significant differences were observed in all four domains of the ASK-Q: a) "Diagnosis" [$t(211)=5.430$,

$p<0.001$], b) "Aetiology" [$t(211)=6.454$, $p<0.001$], c) "Treatment" [$t(211)=5.014$, $p<0.001$] and d) "Stigma" [$t(211)=2.427$, $p<0.005$] (**Table 2**).

Table 2. Between-group comparisons in the ASK-Q and its four domains total scores.

	Mental health professionals (N=73)	General public (N=140)		
	M (SD)	M (SD)	t(211)	p
Diagnosis Domain	15.29 (1.97)	13.87 (1.71)	5.430	<.001
Aetiology Domain	14.08 (1.48)	12.56 (1.70)	6.454	<.001
Treatment Domain	11.43 (1.79)	10.06 (1.95)	5.014	<.001
Stigma Domain	5.96 (1.28)	5.54 (1.13)	2.427	<.005
ASK-Q Total Score	40.80 (3.61)	26.50 (3.80)	7.973	<.001

M: Mean; **SD:** Standard deviation; **ASK-Q:** Autism Stigma and Knowledge Questionnaire.

A ROC analysis was computed to determine the cut-off points of the AKS-Q total score and its four domains. A statistically significant positive discrimination between Mental health professionals and the GP was revealed [AUC 0.817 (95% CI: 0.756-0.878), $p<0.001$]. The optimal cut-off point was found to be equal to 39.00 with a sensitivity of 0.616 and 1-specificity of 0.150 (**Figure 1**).

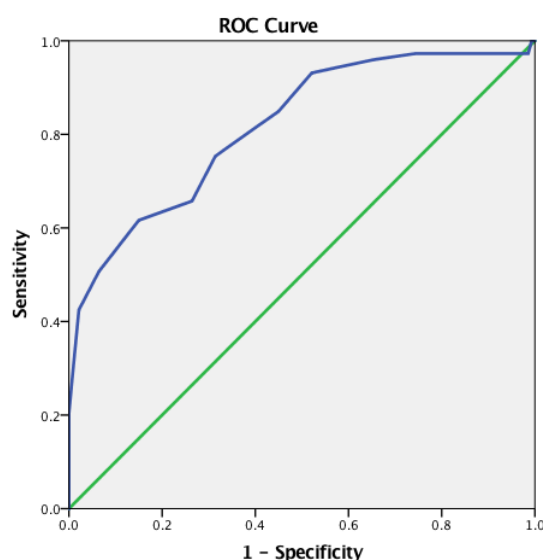


Figure 1. Receiver Operating Characteristics (ROC) curve for the ASK-Q questionnaire total score – Mental health professionals vs. the general public.

Likewise, statistically significant positive discrimination for the ASK-Q four domains was revealed according to the ROC analysis across the task's domains: (a) "Diagnosis" [AUC 0.756 (95% CI: 0.681-0.830), $p<0.001$] cut-off point 15.00 (sensitivity: 0.562 and 1-specificity 0.121); (b) "Aetiology" [AUC 0.762 (95% CI: 0.692-0.832), $p<0.001$] cut-off point 14.00 (sensitivity: 0.479 and 1-specificity 0.086); (c) "Treatment" [AUC 0.697 (95% CI: 0.622-0.773), $p<0.001$] cut-off point 11.00 (sensitivity 0.548 and 1-specificity 0.236) and (d) "Stigma" [AUC 0.663 (95% CI: 0.551-0.716), $p<0.005$] cut-off point 5.00 (sensitivity 0.438 and 1-specificity 0.193) (Figure 2).

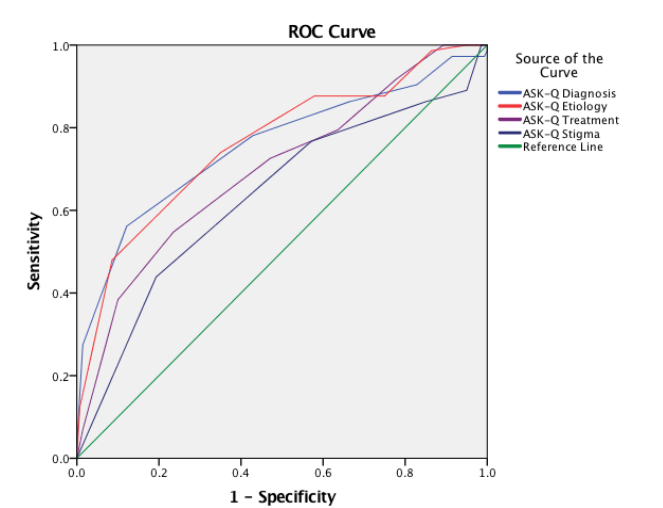


Figure 2. Receiver Operating Characteristics (ROC) curve for the four domains of ASK-Q – Mental health professionals vs. the general public.

Regarding the Reliability and Validity measures for the ASK-Q, the estimated internal consistency of the ASK-Q was acceptable (Cronbach's $\alpha = 0.646$). The item scale correlations of the 48 items of the ASK-Q ranged from 0.620 to 0.654. **Table 3** presents more details about the 48 items.

4.0 DISCUSSION

The primary aim of this study was to adapt the ASK-Q measure into Greek and assess the knowledge adequacy and stigma beliefs towards autism among mental health professionals. The results revealed that ASK-Q is an accurate and valid measure, a result which is in line with findings from previous validation studies of the same task albeit in other languages and cultures (Araujo et al., 2023; Handayani & Paramita, 2020; Silva et al., 2022). Regarding the psychometric properties of the ASK-Q, the ROC analysis revealed that the Greek

Table 3. Items Scales Correlation.

Items	Correlation	Items	Correlation
Q2	.650	Q26	.640
Q3	.642	Q27_rev	.637
Q4	.635	Q28	.630
Q5_rev	.627	Q29_rev	.658
Q6	.647	Q30_rev	.645
Q7	.633	Q31	.648
Q8_rev	.662	Q32	.644
Q9	.629	Q33	.638
Q10_rev	.637	Q34	.654
Q11_rev	.636	Q35	.651
Q12	.646	Q36_rev	.641
Q13	.620	Q37	.640
Q14	.635	Q39_rev	.630
Q15_rev	.642	Q40	.645
Q16	.646	Q41_rev	.633
Q17	.646	Q42	.614
Q18	.638	Q43_rev	.631
Q19	.634	Q44_rev	.639
Q20_rev	.655	Q45_rev	.640
Q21_rev	.641	Q46	.649
Q22	.640	Q47	.645
Q23_rev	.640	Q48	.642
Q24_rev	.642	Q49_rev	.642
Q25	.658		

Q: Question, Rev: Question with Reverse scoring

version of the ASK-Q can discriminate between mental health professionals and the general population as regards autism knowledge and stigma. The calculated cut-off points for the Greek version of ASK-Q between the mental health and the general public were estimated at 39.00 (AUC 0.817) out of a maximum score of 48.00 points. In the Greek validation study of the ASK-Q, the calculated cut-off points were derived from the scores' percentile distribution, and these cut-off points were very close to the cut-offs presented in the first validation study of the measure (Harrison et al., 2017). The other two validation studies (Handayani & Paramita, 2020; Silva et al., 2022) did not calculate cut-off points.

Moreover, it should be noted that the Greek version of the ASK-Q exhibits acceptable psychometric properties, a finding which again agrees with relevant findings from previous studies (Handayani & Paramita, 2020; Harrison et al., 2017; Silva et al., 2022). The internal consistency was acceptable (Cronbach's $\alpha = 0.646$) in the initial development and psychometric evaluation study by Harrison in 2017 (Harrison et al., 2017), where the ASK-Q demonstrated high internal consistency (Cronbach's $\alpha = 0.88$). Also, the analysis returned an acceptable range of Cronbach's alpha values of its items. The item scale correlations of the 48 items of the ASK-Q ranged

from 0.620 to 0.654. Additionally, it was found that the items of the Greek version of the ASK-Q are significantly correlated. According to the results, the Greek version of the ASK-Q is a valid scale and reliable instrument for clinical practice.

Findings indicated that mental health professionals had adequate knowledge about autism, which is in line with previous studies among mental health professionals and health professionals ([Atun-Einy & Ben-Sasson, 2018](#); [Corsano et al., 2019](#); [Heatherann & Drager, 2008](#); [Heidgerken et al., 2005](#); [Paynter et al., 2018](#)). Specifically, a study in Israel ([Atun-Einy & Ben-Sasson, 2018](#)) found that paediatric clinicians demonstrated adequate knowledge of basic assumptions related to the nature of ASD, and its phenotypic heterogeneity and rejected statements describing misconceptions about the aetiology, prognosis, and treatment of ASD. In addition, in the Netherlands, Dutch physicians were shown to have sufficient general knowledge about ASD. However, many scored lower in specific ASD knowledge measures ([van 't Hof et al., 2020](#)). Moreover, a systematic review of health professionals (including mental health professionals) ([Corden et al., 2022](#)) and other studies on mental health professionals ([Corsano et al., 2019](#); [Crane et al., 2019](#); [Heatherann & Drager, 2008](#); [Heidgerken et al., 2005](#); [Stone, 1987](#)) reports sufficient levels of autism knowledge, and this is in line with our findings.

Regarding autism stigma, the result of our study indicated that mental health professionals and the general public did not endorse autistic stigma, which agrees with the results of relevant previous studies ([Kuzminski et al., 2019](#); [Ling et al., 2010](#); [Turnock et al., 2022](#)). Interestingly, some studies ([Gras et al., 2015](#); [van 't Hof et al., 2020](#)) showed that these populations hold positive attitudes toward autism. Another study in Nigeria conducted in 2017 ([Mosaku & Wallymahmed, 2017](#)) reported a positive effect, which was related to work experience on elements of stigma toward mental illness in nurses, physicians, and community health workers. Nevertheless, it must be noted that, as was also pointed out in the literature ([van 't Hof et al., 2020](#)), the absence of similar studies makes the in-depth comparison between the mental health professionals in different countries as regards the level of stigmatising attitudes hard.

Furthermore, the stigma score was low for the two groups and above the cut-off points (0-3) ([Harrison et al., 2017](#)). As the literature has shown so far, poorer knowledge of autism is often correlated with less

positive attitudes and more stigma ([Kuzminski et al., 2019](#); [Ling et al., 2010](#); [Turnock et al., 2022](#)). From the results of our study, it is evident that education and work experience facilitate ASD comprehension and positive attitudes, reducing autistic stigma, which is in correspondence with other studies ([Handayani & Paramita, 2020](#); [Obeid et al., 2015](#); [Someki et al., 2018](#); [Wilson & Peterson, 2018](#)).

Regarding the cut-off points, a differentiation was observed between the results of the initial study of the ASK-Q psychometric properties ([Harrison et al., 2017, 2019](#)) and our findings. Our sample involved mental health professionals, while the initial study recruited participants from two different sources: (a) a large Southeastern university in the U.S. through an Educational Psychology Department research pool primarily comprised of students in their first year of college majoring in education and (b) Amazon's Mechanical Turk (MTurk). This differentiation as regards sampling may be the cause of the higher cut-off points across most of the subdomains of the ASK-Q in our study consisted of Mental health professionals interacting with individuals with ASD across the lifespan and play a crucial role in the diagnosis and intervention in individuals with ASD ([Corden et al., 2022](#)). Previous studies ([Crane et al., 2019](#); [Unigwe et al., 2017](#)) reported a positive relationship between experience of autism and knowledge scores, which further supports our analysis.

4.1 Limitations

The findings of this study must be seen in the light of some limitations. The primary limitation is the insufficient participation of males, as most of the sample was comprised of females. According to the literature ([Lobato et al., 2014](#)), in many studies, there is a strong difference between male and female participants regarding social influences on the decision to participate in clinical research ([Mazure & Jones, 2015](#)). This could influence the results and characterise them as not representable with respect to gender. Future studies should replicate these findings in larger, gender-representative samples and across more professions.

Moreover, recall bias ([Althubaiti, 2016](#)) and the social desirability bias in self-report measures are some of the most prominent biases. To better explain this, many people might report behaviours that they believe are more acceptable and socially approved by others ([Latkin et al., 2017](#)).

Although the test-retest sample was reasonably sized, the samples examining the sensitivity to detect change and cross-cultural reliability were notably smaller. Additional research testing both aspects of reliability and clinical utility in larger samples and more diverse contexts will help to further bolster the claims made about the psychometric strength of the measure. Despite the above limitations, this study has significant value since there is a research gap in estimating the autism knowledge and stigma in Greece in a group of mental health professionals with a specific autism-related instrument.

4.2 Implications

The findings support the need for continuing provision of autism-specific training for all health specialists involved in the diagnostic and intervention procedure and planning for children with autism in Greece. New diagnostic protocols are necessary, as well as updated knowledge for professionals involved in diagnosing children on the manifestation and aetiology of autism. Furthermore, training must incorporate internationally accepted tools that integrate objective screening, diagnosis, and cognition measures, replacing the current protocols that rely on subjective criteria. Moreover, emphasis should be on psychoeducational interventions designed to increase ASD knowledge

among parents and other members of the general population. Interventions with a psychoeducation component have the potential to make meaningful differences in early identification and early intervention of ASD.

5.0 CONCLUSIONS

In conclusion, the ASK-Q advances the psychometric assessment of ASD knowledge. The Greek version of the ASK-Q is a psychometrically reliable and valid tool. This instrument demonstrated acceptable internal consistency, reliability, and validity. This measure was developed for usage across cultures to better document ASD knowledge. Our findings are in accordance with the results from similar studies on other versions of the ASK-Q. As psychoeducation interventions become a more common initial step in many countries, the ASK-Q may be a useful outcome measure to assess their efficacy.

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