



Validation of the Italian version of the Camouflaging Autistic Traits Questionnaire (CAT-Q) in a University population

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ABSTRACT

The Camouflaging Autistic Traits Questionnaire (CAT-Q) is an instrument recently developed and validated in English for measuring social camouflaging. While increasing research is focusing on camouflaging behaviours often used for masking autistic traits in social contexts, the CAT-Q remains the only self-report instrument in this field. We aimed to validate the Italian version of the CAT-Q, further testing its validity and reliability in a large Italian University population ($N = 2439$). We employed the Adult Autism Subthreshold Spectrum (AdAS Spectrum) for assessing autism spectrum conditions. The CAT-Q demonstrated excellent internal consistency and test-retest reliability, as well as strong correlations with the AdAS Spectrum. Our results confirm that the CAT-Q is a valuable instrument for evaluating social camouflaging.

1. Introduction

Autism spectrum disorder (ASD) is a condition featuring an impairment in social communication and interactions, lack of socio-emotional reciprocity, and a specific pattern of restricted interests and stereotyped behaviours [1]. During the last decades, increasing literature focused on investigating ASD clinical presentations, and particular attention has been paid toward subthreshold manifestations of the autism spectrum [2–7]. The presence of subthreshold autistic traits (AT) was reported for the first time among first degree relatives of ASD probands, who also seem to show biochemical and neurobiological alterations similar, although milder, to those reported in ASD individuals, further highlighting the genetic underpinnings of autism spectrum conditions [5,8–12]. Increasing evidence is stressing how AT seem to be continuously distributed in the general population [13–17]. Moreover, they seem to be particularly represented among psychiatric patients with other kinds of disorders, leading to hypothesize that the presence of AT would be linked to a higher vulnerability toward the development of clinically relevant psychiatric symptoms [18–24]. Recent studies reported how AT seem to be associated with a poorer quality of life and higher suicidality risk, also when subthreshold [11,14,18,19,21,25]. Recently, some authors are stressing how ASD presentations without language or intellectual impairment, often come to clinical attention only in adulthood, after the onset of other comorbid mental disorders,

with a high risk of misdiagnosis and/or of worse clinical outcomes [19,26]. Therefore, in light of the possible impact of the underrecognized forms of autism spectrum on mental health, increasing literature focused on the importance of correctly identifying the presence of ASD or AT [18,19,25,27,28]. ASD individuals without intellectual or language disability have been reported to be more aware of their own social difficulties, often developing social-phobic symptoms, but also adopting strategies to compensate them [18,19,25,27–30]. In this framework, an increasing number of studies is focusing on the strategies adopted by individuals in the autism spectrum with the aim to mask their AT in social environments: these kinds of strategies are known in literature as “social camouflaging” or simply “camouflaging” [31,32]. The habit of camouflaging may feature the intentional research of eye contact during social relationships, the imitation of peer’s behaviours and expressions or the use of learned phrases and jokes in conversations [31–35]. It can be at least partially unintentional and, especially when continuously employed since childhood or adolescence, may progressively gain more and more layers of complexity, leading to the construction of a mask, another identity, which the person adopts in social environment [32]. In this framework, some authors hypothesized that camouflaging strategies might play a significant role in the underrecognition of autism spectrum conditions among ASD individuals without language or intellectual impairment [31–36]. However, despite the presence of qualitative case reports (Bargiela et al. [35]), no experimental study has clarified yet the

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relationship between the use of camouflaging strategies and a late ASD diagnosis [31–36]. Although camouflaging strategies might grant a higher level of adjustment and, eventually, also result in hyper-adaptive skills in specific fields, they have been associated with greater level of cognitive and emotional stress, feelings of exhaustion, as well as anxiety and depression symptoms [31,32,37]. However, to date no longitudinal study is available on possible outcomes of camouflaging strategies, and also the association found between camouflaging and greater levels of anxiety or depression symptoms in cross-sectional investigations should be confirmed by studies with a longitudinal design [31,34,38]. Although anecdotal and qualitative descriptions of camouflaging behaviours were not unknown in this field, research specifically focused on this topic only recently, in part due the rising interest toward female phenotypes of ASD, which seem to feature a higher tendency toward camouflaging [31–36]. Despite that, it should be noted that other authors did not report significant sex differences in camouflaging levels, stressing that both males and females in the autism spectrum may use camouflaging strategies, although they might use them for different reasons and/or in different ways [31,38,39]. In the last few years, many authors highlighted how sex differences in ASD prevalence should be reconsidered in light of female-specific presentations of ASD. Lai et al. [33], in their literature review, summarized previous empirical and/or clinical anecdotal reports about sex differences in ASD, which suggest the presence of specific female presentations for this condition. Moreover, the same authors reported that, according to previous studies, females were more often misdiagnosed or generally diagnosed with ASD later than males even if they show similar autistic symptoms [33]. This data lead several authors to hypothesize that sex differences in ASD prevalence should be reconsidered in light of female-specific presentations of ASD, that might (or not) be responsible of ASD underrecognition among females [33–36,40]. According to these studies, females in the autism spectrum would often show different and more socially acceptable kinds of narrow interests, such as animals, celebrities, fashion, fictions or eating habits [33,34,41]. A significant amount of research has also stressed how anorexia nervosa (AN) could be considered as a female presentation of ASD, where restricted interests and stereotyped behaviours are focused on food and diet [22,41]. Moreover, girls or women with autism seem often to show a greater understanding of the need to be involved in social relationships and, on the other hand, also a greater ability to adjust to social environment and maintain relationships with other people, often imitating others' behaviours or adopting other kinds of camouflaging strategies [31–34]. Noticeably, social anxiety has been reported to be more frequent among autistic individuals without intellectual impairment, possibly due to the greater awareness toward their social difficulties [32,42–46]. Social anxiety features, like ASD, difficulties in social relationships, but shows a higher prevalence in females than in males [32,42–46]. It is also possible that social anxiety symptoms may contribute to mask, among females, the presence of an underrecognized ASD [32]. In light of this literature, some authors highlighted the need to develop an instrument for investigating the presence of camouflaging behaviours, proposing different kinds of methods [33,36,47,48]. However, to date, the Camouflaging autistic traits questionnaire (CAT-Q) is the only available instrument for the self-report assessment of camouflaging behaviours. The CAT-Q has been developed and validated by Hull et al. [31]. The questionnaire was built on the basis of the experiences reported by adults in the autism spectrum and then validated in a sample composed by adults with ASD and controls, who completed the questionnaire online. According to their results, the CAT-Q demonstrated an excellent internal consistency and convergent validity with other measures of similar clusters of symptoms [31]. Globally, the instrument seems to be a promising tool for evaluating a dimension that is raising the attention of clinicians and researchers [31]. An increasing number of studies, with different specific purposes, is employing the CAT-Q for measuring camouflaging, and results from the research in this field seem promising. Concerning sex/gender differences, Cage et al., in a sample of autistic people, found

similar CAT-Q scores among males and females, despite females were reported to use camouflaging more often than males for conventional reasons (with a functional purpose on work/academic contexts) [39]. Hull et al. [49] found higher CAT-Q scores among autistic females than among autistic males, although no gender difference in CAT-Q scores was reported among typically developed individuals. Some authors highlighted, by means of the CAT-Q, a link between camouflaging and neuroticism, anxiety and depression as well as with perceived stigma [50–52]. The use of camouflaging strategies was also associated with lower difficulties in executive functions by other authors [53]. Further studies were conducted in samples composed only by people without an ASD diagnosis, according to the increasing interest in conceptualizing camouflaging, like autistic traits, as a dimension continuously distributed from clinical to general population [27]. Results from these works highlighted, also in non-clinical samples, an association of higher CAT-Q scores with higher psychological distress or even with a greater tendency toward suicidal behaviours [51,54,55].

To date, the CAT-Q is available only in English, limiting its use in non-English speakers. Therefore the aim of the present work was to validate the Italian version of the CAT-Q in a large sample of individuals recruited from a University population.

2. Methods

2.1. Participants

This investigation was led among students and employers of University of Pisa. An invitation to participate was sent via e-mail through University of Pisa Institutional Governance (Rectorate). Participants were requested to anonymously complete the psychometric questionnaires online, together with a brief form for socio-demographic variables. No specific information was requested about the presence of psychiatric diagnosis or other medical conditions. Participants did not receive any payment or other benefits for agreeing to participate in the survey. The consent to participate, as explained in the instructions provided to participants, was automatically given by agreeing to complete the questionnaires. A total of 2439 individuals completed the questionnaires. For evaluating test re-test reliability, a group of 22 volunteers accepted to complete again the CAT-Q after 4 weeks from the first assessment. The study was led in accordance with the Declaration of Helsinki and the local Ethics Committees approved all recruitment and assessment procedures.

2.2. Instruments

2.2.1. CAT-Q

The CAT-Q is an instrument developed and validated by Hull et al. [31] with the aim to assess and quantify social camouflaging behaviours typical of individuals in the autism spectrum. The questionnaire is composed by 25 items grouped in three factors: *Compensation* (9 items), which investigates strategies based on actively compensative behaviours in order to adjust to social situations; *Masking* (8 items), which investigates strategies based on hiding autistic-like features and/or on building a full-fledged persona in order to interact with others; *Assimilation* (8 items), which investigates strategies based on attempting to fit in with others during social interactions. The Italian version of the CAT-Q was finalized following a standard “forward-backward” translation method. Forward and backward translations were performed independently by different subjects; all the three translators involved were psychiatrists familiar with autism spectrum psychopathology. Eventual discrepancies in the versions were discussed together by the whole working group of translators, which checked and agreed on the accuracy of the final version.

2.2.2. AdAS spectrum

The AdAS Spectrum is a questionnaire developed for assessing the

broad range of autism spectrum features in adults without intellectual or language impairment. It is available in Italian, English and Spanish [56,57]. The questionnaire has been already used in several studies as a reliable measure of autism spectrum in clinical and non-clinical populations. It features 160 dichotomous items (Yes/No), grouped in seven domains. “The *Childhood/adolescence* domain investigates the presence of autistic symptoms or traits during childhood and adolescence, such as being very quiet or unable to speak, being bullied, avoiding playing or eating with other children (e.g. “when you were a child”...“did gestures of affection (caresses, hugs, kisses) from relatives or friends ever make you feel uneasy?”). The other domains investigate instead the presence of symptoms during lifetime. The *Verbal communication* domain assesses the presence of difficulties in speaking with other people, such as in beginning, ending or taking part in a conversation, and media communication preferences (e.g. “Do you find it hard to intervene in a conversation?”). The *Non-verbal communication* domain evaluates the presence of impairments in non-verbal social behaviours such as outbursts of anger, negative feelings related to physical contact or difficulties in regulating gaze (e.g. “Do you have difficulty looking others straight in the eye or not know where to look when talking to someone?”). The *Empathy* domain investigates deficits in both cognitive and affective empathy, asking questions about the ability to understand other intentions, thoughts and feelings, to interpret facial expressions, or also the presence of intense attachment toward inanimate objects rather than toward other people (e.g. “Is it difficult for you”.. “identifying with someone else?”). The *Inflexibility and adherence to routine* domain assesses features such as insistence on sameness, tendency to show rigid habits, to follow rigid behavioural patterns or procedures, to wear always the same type of clothes or to write list (e.g. “At work, do you prefer to follow precise procedures or patterns?”). The *Restricted interests and rumination* domain investigates the tendency to selectively focus on specific and narrow interests, or to show ruminative thoughts (e.g. “Do you like to think and talk only about the few things that interest you?”). Finally, the *Hyper-/Hyporeactivity to sensory input* domain evaluates the presence of increased or decreased reactivity to stimuli such as temperature, noises, smells, textures or pain (e.g. “If you find yourself in an environment full of noise, smells and bright lights, do you feel uneasy, anxious or frightened?”).

In the validation study, the AdAS Spectrum showed a good validity and reliability. A score over 43 indicates the presence of significant, although subthreshold, AT [56–58]. On the other hand, a score over 70 indicates a probable presence of full-threshold ASD symptoms. In particular, according to Dell'Osso et al. [58], individuals who score in this range are likely to meet two DSM-5 symptomatological criteria for ASD, and they should be considered a high-risk category for the presence of clinically-relevant autism spectrum conditions. However, it should be noted that it does not mean to have an ASD diagnosis, which could not be established only by means of a self-report instrument like the AdAS Spectrum, but requires instead a proper clinical assessment by trained operators, with a specific evaluation of the impact of these symptoms on global functioning [56–58].

2.3. Statistical analyses

Firstly, on the basis of the score reached on the AdAS Spectrum, participants were divided into three groups: people who scored above 70, which is the range of the instrument indicating a likely presence of clinical ASD symptoms (“High-AT group”); people who scored between 43 and 70, which is the score range associated with the presence of significant AT (“Mid-AT group”); people who scored lower than 43 (“Low-AT group”). ANOVA analyses followed by Bonferroni post-hoc comparisons were used for evaluating age differences among groups, while gender differences were evaluated by means of Chi-square tests. Cronbach's alpha was used in order to estimate the internal consistency of the CAT-Q. The validity of the internal structure of the instrument was evaluated performing correlations between the three factors and

between each factor and the total score by means of Person's correlation coefficient. The test-retest reliability of the CAT-Q was assessed by means of the intra-class correlation coefficient (ICC). Sample size calculation for test-retest reliability was derived from formula of ICC test; a minimum sample size of $N = 19$ was required when determining a 0.65 value of minimum acceptable reliability for the ICC, with a power of 90%. The sample size of $N = 22$ was associated with a power of 94%.

The convergent validity was investigated by calculating Pearson's correlation coefficients between CAT-Q total and factor scores with AdAS Spectrum total and domain scores, as an alternative measure of AT. Finally, the known-groups validity was investigated by comparing the mean scores reported on the CAT-Q (total score as well as single factor scores) among the three groups with one-way ANOVA analyses. The Bonferroni test was used for post-hoc comparisons. All statistical analyses performed with SPSS version 23.0.

3. Results

A total of 2439 individuals completed the questionnaires. The sample was composed by a total of 1590 females, 836 males, and 13 individuals who defined their gender as “other”. The mean age of the sample was 26.92 ± 10.18 . Significant differences in sex distribution and mean age were found among groups. In particular, females were significantly less represented in the High-AT group than in the Low-AT group, while no significant differences were found for the Mid-AT group. Moreover, the High-AT group showed a significantly lower mean age than the other two groups, while the Mid-AT group also reported a mean age significantly lower than the Low-AT group (see Table 1).

3.1. Reliability

The CAT-Q showed an excellent internal consistency, with a Cronbach's alpha of 0.904. The Cronbach's alphas for the single factors of the CAT-Q (*Compensation*, *Masking*, *Assimilation*) were all above 0.70 (see Table 2). The three factors of the CAT-Q were strongly correlated with the total score, and each factor showed significantly positive correlations with the others (see Table 3). All the ICCs values for CAT-Q factors and total score were above 0.90, demonstrating an excellent test-retest reliability (see Table 4).

3.2. Convergent validity

CAT-Q and AdAS Spectrum total scores showed a significant and strong correlation ($r = 0.652$). The three factors of the CAT-Q showed significant correlations with AdAS spectrum total score, ranging from a moderate value for *Masking* ($r = 0.419$) to a strong value for *Assimilation* ($r = 0.635$). The CAT-Q total score showed significant correlation also with all AdAS Spectrum domain scores: the weakest correlation was found with AdAS Spectrum *Empathy* domain ($r = 0.365$) while the strongest with AdAS Spectrum *Non-verbal communication* domain ($r = 0.657$). All the correlations between CAT-Q factors and AdAS spectrum domains were positive and significant, although weaker correlations were found between CAT-Q *Masking* factor and some AdAS Spectrum domains. In particular, all the three CAT-Q factors showed their highest correlations with AdAS Spectrum *Non-verbal communication* domain ($r = 0.529$ for *Compensation*, $r = 0.440$ for *Masking*, $r = 0.665$ for *Assimilation*). The weakest correlation coefficients values were found in the correlations of AdAS Spectrum *Empathy* domain with CAT-Q *Compensation* ($r = 0.327$) and *Masking* ($r = 0.150$) factors. Considering the CAT-Q *Assimilation* factor, the lowest correlation was found with AdAS Spectrum *Hyper- Hyporeactivity to sensory input* domain ($r = 0.344$) (see Table 5).

3.3. Known-groups validity

According to the ANOVA analyses, significant differences were found

Table 1

Comparison of socio-demographic variables and AdAS Spectrum total score among groups.

	High-AT group (N = 478)	Mid-AT group (N = 956)	Low-AT group (N = 1005)	Chi-square	p	Post-hoc comparisons
	N(%)	N(%)	N(%)			
sex				19.98	<0.001	F: High-AT < Low-AT group; Other: High-AT > Mid-AT , Low-AT group*
M	181(37.9)	324 (33.9)	331(32.9)			
F	289(60.4)	628(65.7)	673(67.0)			
Other	8(1.7)	4(0.4)	1(0.1)			
	High-AT group (N = 478)	Mid-AT group (N = 956)	Low-AT group (N = 1005)	F	p	
	Mean ± SD	Mean ± SD	Mean ± SD			
Age (years)	24.45 ± 6.88	25.79 ± 9.4	29.17 ± 11.93	47.51	<0.001	High-AT < Mid-AT < Low-AT group*
AdAS Spectrum	85.84 ± 14.49	54.81 ± 7.78	27.91 ± 10.02	5299.26.00	<0.001	ASD > AT>No-AT group*

* $p < 0.05$.**Table 2**

Internal consistency (Chronbach's alpha) of CAT-Q factors and total score.

CAT-Q	Chronbach's alpha
Compensation	0.831
Masking	0.715
Assimilation	0.874
Total score	0.904

Table 3

Correlation among CAT-Q factors in the sample*

CAT-Q	Compensation	Masking	Assimilation	Total score
Compensation	–	0.580	0.562	0.867
Masking	0.580	–	0.442	0.784
Assimilation	0.562	0.442	–	0.830
Total score	0.867	0.784	0.830	–

* All Pearson's correlation coefficients were significant at $p < 0.001$ level, two tailed.**Table 4**

Test-retest reliability (intra-class correlation coefficient) of CAT-Q factors and total score.

CAT-Q	ICC
Compensation	0.917
Masking	0.923
Assimilation	0.936
Total score	0.922

among groups in the scores reported on CAT-Q total score and on all CAT-Q factor scores. In particular, post-hoc tests showed that the High-AT group reported significantly higher mean scores than the Mid-AT and the Low-AT groups, while the AT group reported significantly higher

mean scores than the Low-AT group (see Table 6).

4. Discussion

In this study, we aimed to validate the Italian version of the CAT-Q in a University population. According to the data of Hull et al. [31,36], the CAT-Q seemed to be a promising instrument for evaluating camouflaging behaviours, which may often mask autistic traits among adults, preventing a proper recognition of autism spectrum conditions, in particular among females. In the last few years the relevance of an early diagnosis of ASD, but also of an early recognition of subthreshold AT, has been highlighted by both clinicians and researchers: in this framework, it is important to make measures of camouflaging available also for non-English speaker populations [31–36]. Moreover, the present study had the opportunity to further test the validity and reliability of the CAT-Q in a large sample of individuals from a different population with respect to the original validation study [31,36]. The internal consistency of the instrument was good for the total questionnaire as well as for the single factors, although we found slightly lower values than those reported by Hull et al. [31]. In particular, the lowest value was found, as in the original validation study, for the *Masking* factor. We found also strong correlations between CAT-Q total and single factor scores, and the test-retest reliability was excellent, confirming the good reliability of the instrument in our population. Although the test-retest reliability reported here was even greater than that highlighted in the English validation study by Hull et al. (which ranged from 0.70 to 0.77) [31,36], it should be noted that they used a longer interval between testing (3 months vs. 4 weeks).

As expected, we found that camouflaging behaviours, as measured by the CAT-Q, were higher among individuals with clinical symptoms of ASD (High-AT group), while intermediate scores were found among individuals with subthreshold AT (Mid-AT group). The lowest degree of camouflaging tendencies was reported among individuals without significant AT (Low-AT group). These results further confirm the hypothesis that camouflaging should be considered as a feature distributed

Table 5

Correlation among CAT-Q and AdAS Spectrum scores in the total sample*.

	AdAS Spectrum					
	Childhood/ Adolescence	Verbal communication	Non-Verbal communication	Empathy	Inflexibility and adherence to routine	Restricted interests and rumination
CAT-Q						
Compensation	0.478	0.505	0.529	0.327	0.469	0.489
Masking	0.338	0.329		0.150		0.371
			0.440		0.362	
Assimilation	0.540	0.621		0.413		0.529
			0.665		0.468	
Total score	0.547	0.590	0.657	0.365		0.558
					0.519	

* All Pearson's correlation coefficients were significant at $p < 0.001$ level, two tailed.

Table 6

Comparison of CAT-Q total and domain scores among groups.

CAT-Q	High-AT group	Mid-AT group	Low-AT group	<i>F</i>	<i>p</i>	Post-hoc comparisons
	Mean ± SD	Mean ± SD	Mean ± SD			
<i>Compensation</i>	32.59 ± 9.81	24.27 ± 7.99	19.09 ± 7.28	409.17	<0.001	High-AT > Mid-AT > Low-AT *
<i>Masking</i>	35.49 ± 7.39	31.52 ± 7.43	27.32 ± 7.28	193.52	<0.001	High-AT > Mid-AT > Low-AT *
<i>Assimilation</i>	36.38 ± 9.26	27.13 ± 8.85	20.09 ± 7.36	569.40	<0.001	High-AT > Mid-AT > Low-AT *
<i>Total score</i>	104.46 ± 20.94	82.92 ± 18.86	66.51 ± 17.54	613.54	<0.001	High-AT > Mid-AT > Low-AT *

* $p < 0.001$.

along a continuum from the general to the clinical population, following the continuous distribution of the autism spectrum [31,32]. In order to further explore the association between camouflaging strategies and the autism spectrum, we evaluated also the correlations of the CAT-Q with the AdAS Spectrum. This latter instrument allowed us to investigate which dimensions of the autism spectrum were more associated with camouflaging behaviours. We found significant correlations between all the dimensions of the CAT-Q and AdAS Spectrum domains, in line with the results from Hull et al. [31], which found stronger correlations between the CAT-Q and both the Broad autism phenotype questionnaire (BAP-Q) and the Liebowitz Social anxiety scale (LSAS). The correlations found between the CAT-Q and the AdAS Spectrum were of similar magnitude than those reported in the original validation study between the CAT-Q and the BAP-Q, which, for BAP-Q total score, ranged from 0.67 (correlation with CAT-Q total score) to 0.32 (correlation with CAT-Q *Masking* factor) [31,36].

Noticeably, all the three CAT-Q dimensions showed the highest correlations with AdAS Spectrum *Non-verbal communication* domain, while the weakest correlations were found with AdAS Spectrum *Empathy* and *Hyper-Hyporeactivity to sensory input* domains. This data may confirm that camouflaging is adopted as a coping strategy mainly by individuals with a relatively lower impairment of empathy skills and a higher awareness of their deficits in communication and social interactions [31–36]. Globally our results confirm that the CAT-Q is a valuable instrument for evaluating camouflaging behaviours, and its use in clinical and research settings is recommended in order to shed light on this psychopathological dimension, which may affect significantly the quality of life of the individuals [31–36]. However, results from this study should be considered in light of several limitations. Firstly, the questionnaires were administrated online, eventually leading to biases in collecting reliable answers from the participants. Secondly, our sample was composed by University students and employers, so it may be not representative of the general population. Thirdly, participants were recruited through a mail invitation: this method may imply a selection bias (e.g. selecting only people already interested in the topic of the study), further limiting the extensibility of our results. In particular,

the present work features 478 participants (the 19.6% of the whole sample), who scored in the high-risk range for full-threshold ASD symptoms, while 39.2% of the sample ($N = 956$) reported subthreshold AT. These rates are considerably higher than expected from a non-clinical population, although they are partially in line with previous studies, which stressed how University populations, and especially those from high-ranking Universities and/or from scientific faculties, should be considered a high-risk group with respect to the possible presence of autism spectrum symptoms and traits [13,16]. On the other hand, it is also possible that individuals in the autism spectrum, due to their interest in the topic, agreed to participate in the study in a greater proportion than other ones. Moreover, we did not have information about eventual presence of concurrent mental disorders among the participants, which may have affected the results. Finally, the groups identified by the AdAS Spectrum thresholds showed significant differences for age and gender. Further studies in the general population and possibly with a clinical assessment are needed to improve the generalizability of our results on the validity and reliability of the CAT-Q as an instrument to evaluate camouflaging behaviours. On the other hand, the instrument should be also validated in a clinical setting, among individuals with a confirmed diagnosis of autism. A clinical setting would also allow deepening the investigation on the Italian version of the scale, performing factorial analyses and measurements of invariance. Further research should evaluate, in addition, the association of this version of the CAT-Q with other psychopathological dimensions, such as social anxiety, generalized anxiety, depression or other metrics of well-being, as it was performed for the English-version of the scale [31,36].

Declaration of Competing Interest

None.

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Appendix A. Camouflaging autistic traits questionnaire (CAT-Q)

Per favore legga ognuna delle affermazioni sottostanti e scelga la risposta che corrisponde maggiormente alle sue esperienze durante le relazioni sociali.

Fortemente			Né in accordo né		
in disaccordo (1)	In disaccordo (2)	Parzialmente in disaccordo (3)	in disaccordo (4)	Parzialmente d'accordo (5)	D'accordo (6)

1. Quando interagisco con qualcuno, copio deliberatamente il suo linguaggio corporeo o le espressioni facciali
2. Controllo il mio linguaggio corporeo o le mie espressioni facciali per apparire rilassato/a

3. Raramente sento il bisogno di recitare per portare a termine una situazione sociale
4. Ho sviluppato un canovaccio da seguire nelle situazioni sociali (per esempio, una lista di domande o di argomenti di conversazione)
5. In genere ripeto le frasi che ho sentito dire agli altri esattamente nel medesimo modo in cui le ho sentite la prima volta
6. Adatto il mio linguaggio del corpo o le mie espressioni facciali per apparire interessato alla persona con cui sto interagendo
7. Nelle situazioni sociali, più che sentirmi me stesso, mi sento come se mi stessi esibendo
8. Nelle mie interazioni sociali, utilizzo comportamenti che ho imparato osservando come interagiscono le altre persone
9. Penso sempre all'impressione che faccio agli altri
10. Ho bisogno del supporto di altre persone per socializzare
11. Esercito le mie espressioni facciali e il mio linguaggio corporeo per assicurarmi che appaiano naturali
12. Non sento il bisogno di stabilire un contatto oculare con le altre persone se non lo voglio
13. Devo forzarmi per interagire con altre persone nelle situazioni sociali
14. Ho provato a migliorare la mia comprensione delle abilità che si usano nelle relazioni sociali osservando le altre persone
15. Controllo il mio linguaggio del corpo o le mie espressioni facciali in modo da apparire interessato alla persona con cui sto interagendo
16. Quando mi trovo in situazioni sociali, provo a trovare modi per evitare di interagire con gli altri
17. Ho fatto ricerche sulle regole delle interazioni sociali (ad esempio, studiando psicologia o leggendo libri sul comportamento umano) per migliorare le mie abilità sociali
18. Sono sempre consapevole dell'impressione che faccio sugli altri
19. Mi sento libero di essere me stesso quando sono con altre persone
20. Imparo come le persone utilizzano i loro corpi e i loro volti per interagire con gli altri guardando la televisione o film, o leggendo letteratura d' evasione
21. Adatto il mio linguaggio corporeo o le mie espressioni facciali in modo da apparire rilassato
22. Quando parlo con le persone, sento che la conversazione scorre naturalmente
23. Ho speso tempo imparando abilità utili nelle relazioni sociali dai programmi televisivi e dai film, ed. ho provato ad utilizzarle nelle mie interazioni con gli altri
24. Nelle interazioni sociali, non presto attenzione agli atteggiamenti del mio volto o del mio corpo
25. Nelle situazioni sociali, mi sento come se fingessi di essere "normale"

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