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# Italian validation of the Generic Conspiracist Beliefs Scale (GCBS)

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✦ **ABSTRACT.** L'obiettivo di questa ricerca riguardava la validazione in italiano della *Generic Conspiracist Beliefs Scale (GCBS)*. Sono stati definiti cinque fattori: illeciti governativi (GM), occultamento degli extraterrestri (ET), cospirazioni globali malevoli (MG), benessere personale (PW) e controllo delle informazioni (CI). La coerenza interna, la validità convergente e di criterio erano accettabili. Infine, le caratteristiche sociodemografiche erano associate all'ideazione cospirazionista.

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✦ **SUMMARY.** Although conspiracy theories influence Italian society, there are no Italian questionnaires to evaluate conspiracist ideation. Hence, the study aimed to validate the *Generic Conspiracist Beliefs Scale (GCBS)* in Italian, investigating its validity and reliability. The validation has been done in 2 studies. Specifically, participants completed a translated version of GCBS in Study 1. Explorative Factor Analysis (EFA) showed that the five-factor structure was interpretable. Factors were government malfeasance (GM), extraterrestrial cover-up (ET), malevolent global conspiracies (MG), personal well-being (PW), and control of information (CI). Finally, overall internal consistency was excellent ( $\alpha = .93$ ). Regarding study Study 2, Confirmatory Factor Analysis (CFA) confirmed the structure's excellent fit indexes ( $\chi^2/df = 2.87$ , robust CFI = .957, robust TLI = .941, robust RSMEA = .066, 90% CI [.054, .078]; SRMR = .041). In addition, convergent and criterion validity were acceptable. Finally, socio-demographic characteristics such as political orientation, age, and educational level were related to the likelihood of being engaged in conspiracy theories.

**Keywords:** *Generic Conspiracist Beliefs Scale, Italian validation, Conspiracist ideation*

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## INTRODUCTION

Conspiracy beliefs are widespread worldwide, and their diffusion has triggered a particular interest in these last years. Specifically, the pandemic era of Covid-19 and the war between Russia and Ukraine have generated many conspiracy

theories (e.g., Covid-19 and war are hoaxes, Covid-19 has been released to reduce population or to make earn pharma companies, Goodman & Carmichael, 2020; McManus, D'Ardenne & Wessely, 2020).

Conspiracy beliefs are important because they can influence intentions and behaviors. For instance, conspiracy

beliefs about Covid-19 reduce the intention to vaccinate or to adopt norms to prevent the infection, such as social distancing or washing hands (Bierwiazzonek, Kunst & Pich, 2020; Freeman et al., 2020). In addition, conspiracy theories about a population (e.g., Jews) predict negative attitudes toward it (Swami, 2012). Finally, conspiracy beliefs hinder social behaviors like voting or protecting the environment (Biddlestone, Azevedo & van der Linden, 2022; Jolley & Douglas, 2014).

Sociodemographic characteristics and psychological traits or states have been studied in relation to conspiracy beliefs. For example, the tendency to believe in conspiracy theories is associated with lower education, lower income, and younger age (Swami, 2012; Uscinski & Parent, 2014; van Prooijen, 2017; van Prooijen & Acker, 2015). In addition, some studies have found that people on the far right and left are more likely to believe in conspiracies, while others have failed to do so (McHoskey, 1995; van Prooijen, Krouwel & Pollet, 2015). Regarding psychological traits, anxiety, boredom, schizoid, and paranoid traits are associated with a predisposition to believe in conspiracies (Brotherton & Eser, 2015; Darwin, Neave & Holmes, 2011), while agreeableness has received mixed results (Galliford & Furnham, 2017; Goreis & Voracek, 2019). Instead, stress appears to be a good predictor. Indeed, people in situations rated as stressful tend to believe more in conspiracies (Grzesiak-Feldman, 2013; Sallam et al., 2020).

Unfortunately, conspiracy theories are hard to fight or prove false. One reason for this difficulty could be that people believe in conspiracy theories to satisfy their needs. For instance, Douglas and colleagues (Douglas, Sutton & Cichocka, 2017) hypothesized that conspiracies addressed social (i.e., maintaining a positive image of the self or the group), epistemic (i.e., providing a logical explanation of events or phenomena that are difficult to understand), and existential needs (acquiring a sense of control a new meaning about our existence). Some studies have also confirmed the role of these needs. For instance, a lower level of knowledge about Covid-19 is associated with conspiracy beliefs, satisfying the episteme need (Sallam et al., 2020). In addition, people believe more likely in conspiracy theories when their appearance is threatened, addressing the social need (Cichocka, Marchlewska & de Zavala, 2016). Therefore, an anti-conspiracy theory campaign should consider this evidence and seek alternative explanations that equally satisfy the needs of people.

## The assessment of conspiracy theories

Hence, the assessment of conspiracies is essential to investigate their diffusion over the population and plan campaigns to address them. For this aim, there are many self-reports to evaluate conspiracy beliefs and conspiracist ideation, that is, the tendency to be engaged in conspiracy theories (Brotherton, French & Pickering, 2013). The most used questionnaires are the *Generic Conspiracist Beliefs Scale* (GCBS; Brotherton et al., 2013), the *Flexible Inventory of Conspiracy Suspicions* (FICS; Wood, 2017), the *Conspiracy Mentality Questionnaire* (CMQ; Bruder, Haffke, Neave, Nouripanah & Imhoff, 2013) and the *Conspiracy Mentality Scale* (CMS; Stojanov & Halberstadt, 2019).

The difference between these instruments is that GCBS and CMQ measure conspiracist ideation by proposing a series of statements that refer to general conspiracies (Brotherton et al., 2013; Bruder et al., 2013). For example, GCBS asks how much the subject agrees that alien contacts are kept hidden from citizens (Brotherton et al., 2013). Conversely, FICS and CMS have content-independent items (Stojanov & Halberstadt, 2019; Wood, 2017). For instance, FICS proposes that sentences be completed at the participant's discretion (Wood, 2017). Finally, questionnaires exist that investigate specific conspiracies, that is, on a particular exact topic. For example, the 9/11 questionnaire investigates conspiracies involving the terrorist attacks on the Twin Towers of 9/11 (Swami, Chamorro-Premuzic & Furnham, 2010).

## THE GENERIC CONSPIRACIST BELIEFS SCALE (GCBS)

GCBS is one of the most used and famous self-reports that measures conspiracist ideation, that is, the engagement level in conspiracy theories. It consists of 15 items. Brotherton et al. (2013) identified five dimensions: a) government malfeasance (GM), that is assuming that the government is involved in criminal operations ( $\alpha = .93$ ); b) extraterrestrial cover-up (ET), regards thinking that the encounters with extra-terrestrials and associated evidence are hidden ( $\alpha = .94$ ); c) malevolent global conspiracies (MG) theorize that small secret groups control the world's fortunes ( $\alpha = .94$ ); d) personal well-being (PW), that is, some events, such as the spread of diseases, are secretly caused

by some organization ( $\alpha = .95$ ); e) control of information (CI) relates to control and suppress information at various levels, such as media, scientists, or governments ( $\alpha = .87$ ). The instrument showed good psychometric characteristics, such as excellent internal consistency ( $\alpha = .93$ ), test-retest reliability ( $r = .89, p < .001$ ), as well as good convergent ( $r = .86, p < .001$ ) and discriminant ( $r = .20, p < .05$ ) validity (Brotherton et al., 2013).

## AIM

Although the infodemic of conspiracy theories also affected Italy (Diseases, 2020), there is no Italian questionnaire to evaluate conspiracy beliefs or conspiracist ideation. The only exception is one by Antichi and colleagues (Antichi, Goretzko & Giannini, 2022) that assesses conspiracies about Covid-19 and the related agent engaged in its diffusion. However, there is a need for a questionnaire that evaluates conspiracies in general without focusing only on a single historical phenomenon. Furthermore, to our knowledge, there is no Italian validation of any international self-report that assesses conspiracies.

Hence, this article aims to validate the *Generic Conspiracist Beliefs Scale* (GCBS; Brotherton et al., 2013) in Italian. The first study investigates the structure of the GCBS and the internal consistency for the subscales and the overall GCBS. In contrast, the second study aims to confirm the structure of GCBS on a second different sample, calculating fit indexes, convergent, and criterion validity and investigating sociodemographic characteristics' effect on conspiracist ideation.

## STUDY 1

### Study 1: Sample

Five hundred sixteen participants were recruited to complete the online questionnaire through convenience sampling ( $N = 516$ , 197 men, 314 women, 5 other,  $M_{\text{age}} = 32.69$ ,  $SD_{\text{age}} = 14.11$ ). Indeed, participants could apply to the study through a link shared on social networks (e.g., Facebook, LinkedIn). In this sample, 98.6% were Italian, while the remaining 1.4% were from other countries. Regarding Italian regions, 79.5% of participants were from the Center, while the

different zones were a minority, such as North-West (7.9%) or North-East (7.6%), and Southern (2.5%). Most of the sample was single (71.5%) and lived with their parents (53.1%). Considering the job condition, 40.5% were unemployed, 42.8% were employed, while minorities were housewives (11.4%), students (3.3%), and retirees (1.9%). In addition, the majority had a family income lower than 36151.98 euros (55.4%), while 30.8% indicated an income between 36151.99 and 70000 euros. Furthermore, most had homeownership (77.1%). Regarding educational qualifications, 45.3% had a high school degree, whereas 25.8% had a bachelor's and 20% had a master's degree. Political orientation was predominately left (30.4%) or center-left (32.9%), followed by center-right orientation (15.7%).

### Study 1: Materials

- *Sociodemographic characteristics*. Participants indicated nationality, Italian region, ethnicity, gender identity, marital status, housing situation, living situation, highest educational qualification, total household income, employment, and political orientation.
- *Generic Conspiracist Beliefs Scale* (GCBS; Brotherton et al., 2013). GCBS measures conspiracist ideation. It consists of 15 items. Participants must indicate how each assertion is true on a 5-point Likert scale (1 = definitely not true; 5 = definitely true). Every item score is summed up to obtain an overall score reflecting conspiracist ideation. A higher score corresponds to higher conspiracist ideation.

### Study 1: Procedure

Regarding the translation process from English to Italian, the first and the last authors generated their translation versions. Subsequently, the two versions were merged into a single consensus one. This step was carried out to detect any bias or ambiguity and correct them in a preventive way. Then, the Italian version was compared by a mother tongue with the original English version, investigating any discrepancies. The back-translation ensured that the meaning of each item was the same for both versions. The instruments were then tested on a small group of people to investigate their alternative formulations, to verify their intelligibility, interpretation, and cultural relevance. Finally, the final proofreading

of the translation was done to highlight and correct any typographical and grammatical errors (see the Appendix for the Italian version of GCBS).

Once the questionnaire was completed, a web version was created through Google Forms. The link has been shared on social networks (e.g., Facebook, LinkedIn). Participants had to accept informed consent before answering the questionnaire, which was 15 minutes long. Participants did not receive compensation (e.g., money, educational credit). The university's ethics committee approved the study.

## Study 1: Data analysis

Descriptive statistics were calculated using the Statistical Package for Social Science (SPSS) version 26. Moreover, item analysis was performed by calculating the item's means, standard deviations, kurtosis, skewness, and correlation coefficients.

Exploratory Factor Analysis (EFA) was performed to investigate the structure of the GCBS using principal-axis factoring. Factor retention methods were the scree-plot and the Kaiser-Guttman rule. In addition, the solution underwent Promax oblique rotation. The Kaiser-Meyer-Olkin (KMO) criterion and Bartlett's test were performed to determine the feasibility of EFA. Furthermore, the uniqueness and communality indices were estimated for each item. Finally, Cronbach's alfa was calculated for each dimension.

## Study 1: Results

Item analysis showed that skewness and kurtosis values were between -1 and 1 for almost every item. Exceptions were items 3, 13, and 14, showing a slightly positive skewness; items 1, 2, 12, and 15, indicating a slightly negative kurtosis; and item 3, with a slightly positive kurtosis (see Table 1).

Furthermore, KMO (.94) and Bartlett test ( $\chi^2 = 4833.66$ ,  $p < .001$ ) reported that EFA was feasible. The correlation matrix shows that every GCBS item correlated significantly with each other (see Table 2). Indeed, every correlation was over .30. However, the fifth item correlated at .80 with the fourth. Since multicollinearity hinders evaluating every variable's loading on each factor, we decided to eliminate the fifth item.

We obtained a solution with only two factors in the first EFA, explaining 60.68% of the variance. Scree-plot and Kaiser's criterion agreed with this solution. Every item loaded on the first factor except for items 3, 8, and 13, which loaded on the second (see Table 3). However, since the first solution was not interpretable and Brotherton et al. (2013) isolated five factors, another EFA was run, setting five as a fixed value for factor retention. This second solution explained 76.96% of the variance (see Table 4), and every factor correlated with each other (see Table 5).

In the second EFA solution, items 1, 6, and 11 loaded on the government malfeasance (GM) factor, while items 2, 7, and 12 loaded on malevolent global conspiracies (MG) one. Moreover, the extraterrestrial cover-up (ET) factor comprised items 3, 8, and 13, while the personal well-being (PW) factor comprised items 4, 9, and 14. Finally, items 10 and 15 loaded on the control of information (CI) factor.

Regarding reliability, Cronbach's alfa was .84 for GM, .85 for MG, .86 for ET, .79 for PW, and .57 for CI. Finally, overall, Cronbach's alfa was .93.

## STUDY 2

### Study 2: Sample

Four hundred and two participants responded to the online questionnaire through convenience sampling. Specifically, 99.9% were Italian; there were 50% of women and men, and the average age was 42.27 ( $SD = 15.07$ ). Most were from the North-West (52.2%) and Center (32.6%) of Italy, while the other zones were a minority, such as North-East (9.7%), Southern (4%), and Peninsular (1.7%). The majority of the sample was celibate (44.5), married (42.8), single (23.6), and without children (49%). Regarding the total house income, 47.5% declared a lower 36151.98 euros, while 39.3% indicated an income between 36151.99 and 70000 euros. Most were homeowners (66.9%) or lived in a rented house (25.1%). The majority were full-time (38.1%), self-employed (18.9%), or part-time employed (16.1%), while minorities were housewives (5%), students (10.4%), and retirees (7.7%). Regarding educational qualifications, high school (28.6%), bachelor's (22.6%), and master's (39.6%) degrees were the most frequent. Dominant political orientations were left (21.4%), center-left (29.1%), right (11.9%), and center-right (22.9%).

**Table 1** – Item analysis

Item	Mean (SD)	Skewness	Kurtosis	Item-Total score correlation
1	2.39(1.21)	.381	-1.104	.67**
2	2.53(1.29)	.248	-1.235	.70**
3	1.61(.97)	1.558	1.556	.64**
4	2.06(1.19)	.844	-.453	.81**
5	2.06(1.19)	.946	-.169	.81**
6	2.30(1.24)	.602	-.815	.76**
7	2.19(1.24)	.637	-.874	.77**
8	2.06(1.24)	.899	-.422	.62**
9	2.19(1.39)	.728	-.962	.70**
10	2.33(1.12)	.334	-.969	.58**
11	2.30(1.20)	.509	-.959	.82**
12	2.31(1.22)	.448	-1.074	.79**
13	1.75(.96)	1.100	.298	.68**
14	1.75(1.04)	1.306	.725	.72**
15	3.21(1.32)	-.342	-1.085	.74**

*Note.* The table shows the main descriptive statistics for every item, such as mean and standard deviation. Skewness and Kurtosis indices are calculated to assess the distribution of each item. The Item-Total score correlation column reports every correlational coefficient between each item score and the GCBS total score.

\*\*  $p < .01$

## Study 2: Materials

- *Sociodemographic characteristics.* Participants indicated nationality, Italian region, ethnicity, gender identity, marital status, housing situation, living situation, highest educational qualification, total household income, employment, and political orientation.
- *Modified Generic Conspiracist Beliefs Scale (GCBS;*

Brotherton et al., 2013). Participants completed the GCBS with 14 items indicating how each assertion is true. The fifth item of the original version was eliminated to prevent multicollinearity (see the Appendix for the Italian version of GCBS).

- *Contemporary Conspiracist Beliefs about Covid-19* (Antichi et al., 2022). The questionnaire comprises 21 items to investigate contemporary conspiracist beliefs about

**Table 2** – Correlation matrix between items

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1														
2	.463	1													
3	.407	.334	1												
4	.504	.475	.468	1											
5	.492	.451	.481	.800	1										
6	.623	.518	.390	.590	.630	1									
7	.421	.602	.432	.617	.628	.572	1								
8	.389	.309	.702	.488	.446	.422	.454	1							
9	.341	.359	.336	.552	.515	.422	.449	.313	1						
10	.289	.365	.325	.419	.406	.372	.400	.325	.290	1					
11	.609	.471	.506	.627	.655	.686	.597	.488	.474	.435	1				
12	.437	.610	.414	.637	.634	.589	.733	.386	.494	.383	.626	1			
13	.380	.328	.643	.528	.500	.439	.477	.706	.445	.359	.525	.475	1		
14	.433	.449	.444	.605	.640	.548	.573	.417	.556	.352	.512	.542	.506	1	
15	.445	.474	.385	.540	.540	.528	.484	.424	.466	.401	.549	.541	.440	.486	1

*Note.* The table shows the correlation matrix between the 15 items of GCBS. Every correlation is statistically significant ( $p < .001$ ).

Covid-19 and the related agents involved in its spread. Participants had to indicate their degree of agreement or disagreement on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). A higher score corresponded to a more significant agreement on conspiracy theories about Covid-19. Moreover, Antichi et al. (2022) identified three dimensions: a) origins of Covid-19 and purposes behind its spreading ( $\alpha = .94$ ); b) agents that favored Covid-19's spreading ( $\alpha = .90$ ); c) skepticism ( $\alpha = .57$ ). Fit indexes were good (e.g., RMSR = .03, TLI = .908,

RMSEA = .081, 90% CI [.075, .087]). The instrument has good convergent validity ( $r = .79, p < .01$ ).

## Study 2: Data analysis

We recurred to Confirmation Factor Analysis (CFA) for testing the model and calculating fit indexes using R Studio software (lavaan, semPlot, semTools, and haven libraries). Since we found two alternative models in the EFA process,

**Table 3** – Solution with two factors

Item	Factor 1	Factor 2
1	.584	.081
2	.778	-.144
3	.021	.782
4	.700	.133
6	.786	-.017
7	.780	.007
8	-.077	.920
9	.567	.066
10	.430	.116
11	.695	.146
12	.870	-.086
13	.104	.746
14	.623	.130
15	.630	.082

*Note.* This table shows the factor matrix where the two-factor solution is reported. In addition, standardized factor loadings for every item after promax rotation are presented.

the model with two factors was compared with the five-factor model. Maximum likelihood with robust standard errors (MLR) was used to estimate the models.

Moreover, we calculated the chi-square per degree of freedom ratio ( $\chi^2/df$ ) the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the robust Comparative Fit Index (CFI), the robust Tucker-Lewis Index (TLI), the robust Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Finally, the convergent and predictive validity of

GCBS was investigated by calculating Spearman coefficients and a regressive model including the five factors.

After confirming the structure, the total score of conspiracist ideation and its descriptive statistics was calculated using SPSS. Next, we explored gender identity and political orientation differences among the conspiracist ideation with one-way independent sample ANOVA with Bonferroni post-hoc. Finally, the Spearman correlation was calculated to investigate the association between conspiracist ideation, age, and educational level.

**Table 4** – Solution with five factors

Item	ET	MG	GM	PW	CI	Communalities	Uniqueness
1	.022	-.095	.948	-.057	-.076	.640	.360
2	-.100	.624	.135	-.141	.192	.521	.479
3	.782	.015	.074	-.042	-.024	.634	.366
4	.091	.205	.155	.389	.061	.641	.359
6	-.054	.165	.691	.042	.005	.680	.320
7	.082	.994	-.072	-.017	-.126	.793	.207
8	.952	-.012	.005	-.152	.051	.788	.212
9	-.078	-.084	-.064	.901	.038	.604	.396
10	.105	.161	-.060	-.031	.428	.310	.690
11	.116	.121	.508	.058	.111	.675	.325
12	-.046	.763	-.025	.093	.078	.722	.278
13	.722	-.022	-.078	.222	.021	.686	.314
14	.073	.168	.098	.554	-.079	.573	.427
15	.014	.034	.044	.152	.557	.556	.444

*Legenda.* ET = extraterrestrial cover-up; MG = malevolent global conspiracies; GM = government malfeasance; PW = personal well-being; CI = control of information.

*Note.* This table shows the factor matrix where the five-factor solution is reported: every item has a standardized factor loadings for each factor. Promax rotation has been used to improve interpretability. Item 5 has been eliminated. Communalities (i.e., the proportion of shared variance) and Uniqueness (i.e., specific and error variances) indexes are shown for every item.

**Table 5** – Factor correlation matrix

Factor	1	2	3	4	5
1. ET	1				
2. MG	.638	1			
3. GM	.650	.812	1		
4. PW	.687	.819	.768	1	
5. CI	.663	.839	.850	.806	1

*Legenda.* ET = extraterrestrial cover-up; MG = malevolent global conspiracies; GM = government malfeasance; PW = personal well-being; CI = control of information.

*Note.* The table shows the correlation matrix between the five factors.



## Study 2: Results

- *Confirmation Factor Analysis (CFA)*. The five factors model had better fit indexes than the two-factor model (see Table 6 for a confrontation). Specifically, the five-factor model had  $\chi^2/df = 2.87$  ( $\chi^2 (67) = 193.369, p < .001$ ), which is an acceptable value since the threshold has to be lower than 3 (Schumacker & Lomax, 2010). In addition, models with robust CFI and TLI above .90 are considered adequately fitted (Bentler, 1990; Tucker & Lewis, 1973). The five-factor model's robust CFI was .957, while the robust TLI was .941. Finally, an RMSEA value below .80 and an SRMR value below .50 indicate a close model fit (Jöreskog & Sörbom, 1982; Steiger, 2000). The five factors model showed a close fit (robust RMSEA = .066, 90% CI [.054, .078]; SRMR = .041). Figure 1 shows the path model.
- *Convergent and criterion-related validity*. Convergent validity with the Contemporary Conspiracist Beliefs about Covid-19 questionnaire was acceptable ( $r = .74, p < .001$ ). In addition, to test criterion validity, the five factors were inserted as predictors in a regressive model using the total score of the *Contemporary Conspiracist Beliefs about Covid-19* questionnaire as the outcome variable. The regressive model was significant ( $F_{(5, 396)} = 144.73, p = .001$ ), explaining 65% of the variance ( $R^2 = .65$ ). Of the five factors, GM, PW, and CI were significant predictors, while MG and ET were not (see Table 7 for standardized b values, *t*-tests, and *p*-values).
- *Conspiracist ideation and sociodemographic characteristics*. The average conspiracist ideation was 35.38 ( $SD = 11.20$ ). Conspiracist ideation did not significantly differ between gender identities ( $F_{(1, 400)} = .405, p = .525$ ). Instead, there were significant differences between educational levels ( $F_{(6, 395)} = 4.08, p = .001$ ). Specifically, Bonferroni post-hoc shows significative mean differences between far-right and left ( $M_{diff} = 15.59, p = .044$ ), centre-left ( $M_{diff} = 15.52, p = .043$ ), and centre ( $M_{diff} = 17.61, p = .017$ ). Moreover, there was a significant negative association between conspiracist ideation and educational level ( $r_s = -.22, p < .001$ ) and a positive one with age ( $r_s = .14, p < .005$ ).

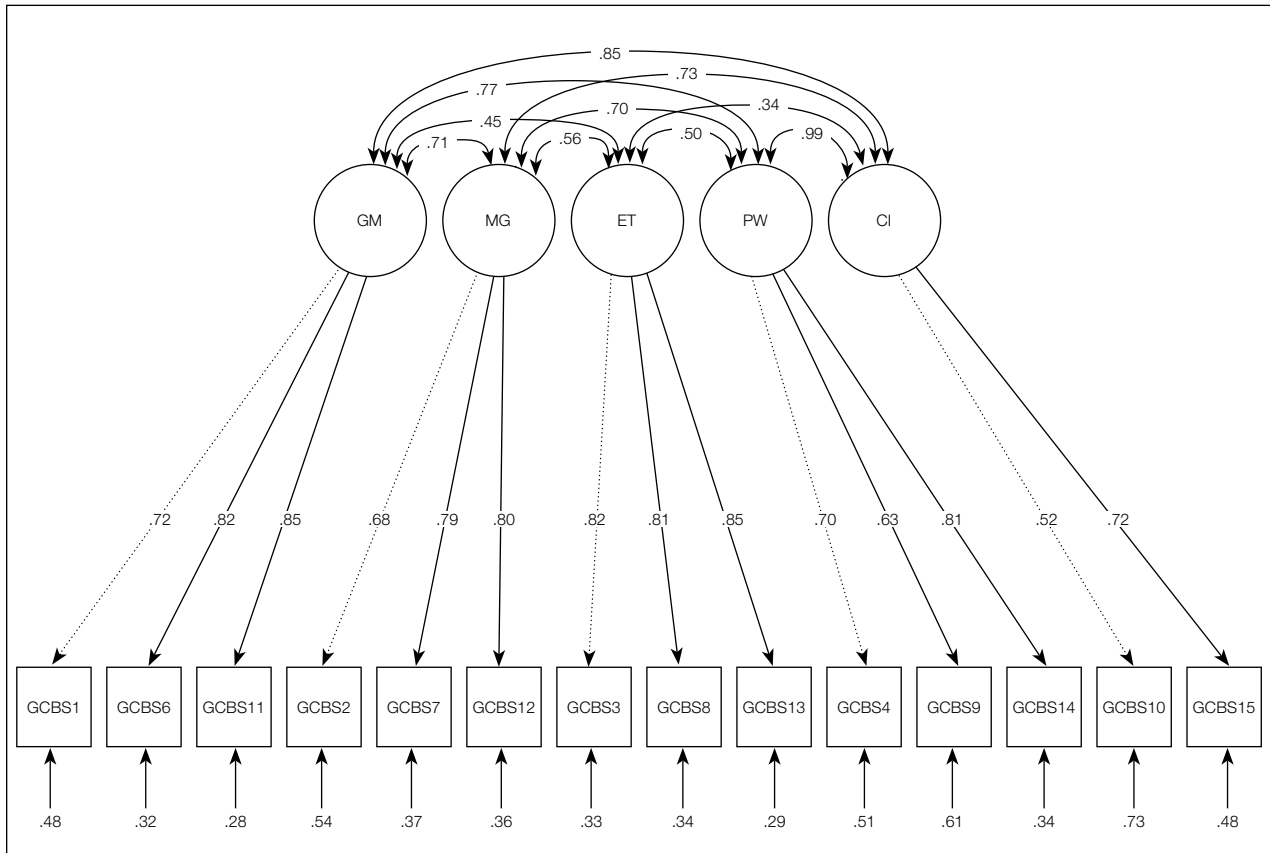
**Table 6** – Confirmatory Factor Analysis (CFA) indexes

Indexes	Solutions	
	Two-factors solution	Five-factors solution
$\chi^2/df$	5.92	2.87
Akaike Information Criterion (AIC)	15674.625	15436.035
Bayesian Information Criterion (BIC)	15790.522	15587.900
Robust Comparative Fit Index (CFI)	.867	.957
Robust Tucker-Lewis Index (TLI)	.841	.941
Robust Root Mean Square Error of Approximation (RMSEA)	.109	.066
Standardized Root Mean Square Residual (SRMR)	.067	.041

*Legenda.*  $df$  = degree of freedom.

*Note.* The table shows the confrontation of fit indexes between the two-factor and the five-factor solutions.

**Figure 1** – Five-factors solution path model



*Legenda.* GM = government malfeasance; MG = malevolent global conspiracies; ET = extraterrestrial cover-up; PW = personal well-being; CI = control of information.

*Note.* The figure shows the path model of the five-factor solution for Confirmatory Factor Analysis (CFA).

**Table 7** – Regressive Model with GCBS factors scores predicting Conspiracist Beliefs about Covid-19

Factor	<i>b</i>	SE	<i>b*</i>	<i>t</i>	<i>p</i> -value	95%CI
ET	.065	.248	.009	.26	.794	[-.423, .552]
MG	-.048	.242	-.008	-.20	.844	[-.523, .428]
GM	1.209	.244	.210	4.95	<.001	[.729, 1.689]
PW	2.991	.269	.496	11.12	<.001	[2.462, 3.520]
CI	1.975	.403	.209	4.90	<.001	[1.182, 2.768]

*Legenda.* *b\** = standardized *b* value; ET = extraterrestrial cover-up; MG = malevolent global conspiracies; GM = government malfeasance; PW = personal well-being; CI = control of information.

## DISCUSSION

We performed item analysis and EFA on 516 participants in the first study. Two solutions were found: the first contained only two factors; the other had five factors. Since the first was not interpretable, we chose the five-factor solution. The factors explained the same items in Brotherton et al.'s study (2013). Hence, we named the factors in the same manner: government malfeasance (GM), extraterrestrial cover-up (ET), malevolent global conspiracies (MG), personal well-being (PW), and control of information (CI).

We eliminated the fifth item to prevent multicollinearity. So, while the GCBS of Brotherton et al. (2013) comprises 15 items, our version has 14 items. Moreover, the reliability of every scale of our version is lower than the original. For example, our first study showed that Cronbach's alpha was .84 for GM, .85 for MG, .86 for ET, .79 for PW, and .57 for CI. At the same time, Brotherton et al. (2013) found  $\alpha = .93$  for GM,  $\alpha = .94$  for MG,  $\alpha = .94$  for ET,  $\alpha = .95$  for PW, and  $\alpha = .87$  for CI. However, overall reliability was .94, similar to Brotherton et al. (2013)'s estimate ( $\alpha = .93$ ). Therefore, GCBS has excellent internal consistency in the Italian and English versions.

We hypothesize that the low Cronbach's alpha for CI could be due to the low number of items since we eliminated one. Indeed, the fifth item loaded for CI is in the original version. Another explanation considers that items from CI and PW are similar and could not discriminate the dimension very well. For instance, the fourteen item states, "Experiments involving new drugs or technologies are routinely carried out on the public without their knowledge or consent" (Brotherton et al., 2013, p. 15). In comparison, the fifteen states, "A lot of important information is deliberately concealed from the public out of self-interest" (Brotherton et al., 2013, p. 15). Although the fourteen-item load on PW and the fifteen on CI, concealed information is the common theme of both.

The second study aimed to confirm the factor structure on another sample of 404 participants. CFA indexes showed that the five-factor solution had a superior fit than the two-factor solution, proving our choice to adopt the first in favor of the latter. The goodness of fit of the model was excellent ( $\chi^2/df = 2.87$ , CFI = .957, RSMEA = .066, SRMR = .041). Moreover, Brotherton et al. (2013) obtained similar results ( $\chi^2/df = 1.76$ , CFI = .97, RMSEA = .06, SRMR = .06) although we used the robust version of CFI, RMSEA, and SRMR.

Furthermore, the convergent validity of the Italian GCBS

was good ( $r = .74$ ,  $p < .001$ ) but lower than what Brotherton et al. (2013) found ( $r = .86$ ). However, we used a different questionnaire to assess the convergent validity. Indeed, we decided to use a validated Italian questionnaire instead of translating another instrument. The only available when we projected the study was the *Contemporary Conspiracist Beliefs about Covid-19* (Antichi et al., 2022). Instead, Brotherton et al. (2013) used the *Belief in Conspiracy Theories Inventory (BCTI)* (Swami et al., 2010) and the *Belief in 9/11 conspiracy theories* (Swami et al., 2010) that no one has ever validated in Italian.

Moreover, the criterion validity was acceptable. Specifically, GM, PW, and CI predicted conspiracist ideation about Covid-19. These results could depend on the fact that Antichi et al. (2022)'s questionnaire focuses on hidden organizations, specific governments, or people (e.g., Bill Gates) responsible for Covid-19 spreading. These items have common themes like government maleficent, well-being, and concealed information significantly related to GM, PW, and CI. In addition, since Antichi et al. (2022)'s questionnaire does not mention alien encounters, it is reasonable that ET was not a significant predictor in our Study 2.

Finally, Study 2 also investigated the relationship between sociodemographic characteristics and GCBS. We found that conspiracist ideation was negatively related to educational level and positively related to age. The higher academic level as a protective factor against conspiracy beliefs is in line with the literature (van Prooijen, 2017; van Prooijen & Acker, 2015). However, younger age is not a protective factor. Indeed, age is negatively associated with conspiracy beliefs (Swami, 2012), and adolescents from 10 to 14 years are more likely to believe in conspiracy theories (Jolley, Douglas, Skipper, Thomas & Cookson, 2021).

Moreover, while there were no differences in gender identity, the political orientation predicted different conspiracist ideation levels whereby far-right participants engaged more likely in conspiracy beliefs. However, since the literature is inconsistent regarding the presence or absence of these associations between gender identity, political orientation, and conspiracist ideation, it is prudent to be cautious in judging this result in line with other studies. For instance, Cassese and colleagues (Cassese, Farhart & Miller, 2020) found that women believed less in conspiracy theories than men, while there was no gender difference in our Study 2. Regarding political orientation, while McHoskey (1995) did not find a significant association, van Prooijen et al.

(2015) found that political extremes (both left and right) were associated with conspiracy beliefs.

Hence, sociodemographic characteristics could explain the different results between our study and Brotherton et al. (2013)'s validation study of GCBS. Regarding the sample, Brotherton et al. (2013) used an undergraduate student sample, while our samples had an older average age. In addition, the sample size between our studies and Brotherton et al. (2013)'s studies are similar. Considering the gender distribution, Brotherton et al. (2013) recruited the first two samples composed of 45% and 77.9% of females. Conversely, our first sample contained 60.85% of women, while the second was perfectly balanced. Cassese et al. (2020) found that gender influenced engagement in conspiracy theories. Finally, since Brotherton et al. (2013) did not specify other sociodemographic characteristics, such as political orientation and education, it is unknown if these variables influenced their results.

## CONCLUSION

This article aimed to validate GCBS in Italian since no validated questionnaire assessed general conspiracy beliefs in Italy. A newly validated questionnaire could be helpful for future research to investigate conspiracy theories and associated behaviors more reliably. Indeed, the translated GCBS has good psychometric indexes, such as internal consistency, convergent, and criterion validity. Moreover,

new campaigns that aim to fight conspiracy theories could use the translated CGBS to assess the effect of interventions.

However, there are some shortcomings to consider. First, researchers should be aware that our GCBS version misses item five, compromising in part the internal consistency of the CI sub-scale. Hence, the interpretation of the CI sub-scale should be cautious. Second, while Brotherton et al. (2013) assessed test-retest reliability, we still need to. Indeed, we use a Google form where participants could respond entirely anonymously. Although this strategy might prevent social desirability, it is impossible to maintain contact with the same persons to complete the questionnaire two times. Last, most recruited participants were from Center and North-West Italy, while the other zones were a minority, especially South Italy and Peninsular Italy. Although we have shared the link to Google form online, our social network profile could have limited the spread of the questionnaire to some zones.

To conclude, future studies should assess the test-retest reliability of our translated version of GCBS in different samples with various characteristics to extend generalizability. Furthermore, future research should balance the sample considering sociodemographic characteristics since we have demonstrated their influence on the likelihood of being engaged in conspiracy theories. Finally, Anti-conspiracy theory campaigns and a new trend of research in Italy are desirable. Having a validated translated questionnaire is the first step in this direction.

**Conflict of interest:** The authors declare that the research was conducted without any potential conflict of interest.

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## APPENDIX

*List of GCBS items*

<b>Number of items</b>	<b>Description</b>
1	Il governo è coinvolto nell'omicidio di cittadini innocenti e/o personaggi pubblici noti e lo tiene segreto.
2	Il potere detenuto dai capi di Stato è inferiore rispetto a quello di piccoli gruppi sconosciuti che controllano realmente la politica mondiale.
3	Le organizzazioni segrete comunicano con extraterrestri, ma lo mantengono nascosto ai cittadini.
4	La diffusione di determinati virus e/o malattie è il risultato degli sforzi deliberati e nascosti di alcune organizzazioni.
5 <sup>a</sup>	Gruppi di scienziati manipolano, fabbricano o eliminano le prove per ingannare i cittadini.
6	Il governo autorizza o compie atti di terrorismo sul proprio suolo, mascherando il proprio coinvolgimento.
7	Un piccolo gruppo segreto di persone è responsabile nel prendere tutte le principali decisioni mondiali, come andare in guerra.
8	Le prove di contatti con un extraterrestre vengono nascoste al pubblico.
9	La tecnologia con una capacità di controllo mentale viene utilizzata sulle persone a loro insaputa.
10	La tecnologia nuova e avanzata che danneggerebbe l'industria attuale viene soppressa.
11	Il governo usa le persone come capri espiatori per nascondere il proprio coinvolgimento in attività criminali.
12	Alcuni eventi significativi sono stati il risultato dell'attività di un piccolo gruppo che manipola segretamente gli eventi mondiali.
13	Alcune voci o avvistamenti di UFO sono pianificati o messi in scena per distrarre il pubblico da un contatto alieno realmente avvenuto.
14	Gli esperimenti che coinvolgono nuovi farmaci o nuove tecnologie vengono regolarmente condotti sui cittadini senza che ne siano al corrente o che abbiano fornito il loro consenso.
15	Molte informazioni importanti vengono deliberatamente nascoste al pubblico per interesse personale.

*Note.* <sup>a</sup> Item 5 has been eliminated from the model.