

Article

## Cross-Cultural Validation of the Sexting Behaviors and Motives Questionnaire (SBM-Q)

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### ARTICLE INFO

Received: April 26, 2024

Accepted: July 19, 2024

#### Keywords:

Sexting behaviors

Motives

Consent

Cross-cultural validation

Cultural nuances

### ABSTRACT

**Background:** The proliferation of sexting among adolescents around the world today has woven a complex tapestry of sexual expression and exploration. However, its implications extend beyond consensual engagement, occasionally manifesting as a form of cyberviolence. Varied prevalence rates further complicate our understanding of the extent of youth sexting worldwide. Therefore, this study aims to provide a tool to measure sexting in young people from different countries by validating the Sexting Behaviours and Motives Questionnaire (SBM-Q), a comprehensive instrument that captures the diversity of consensual and non-consensual sexting behaviors and motives in different countries. **Method:** A total of 4739 students, aged 15 to 25, participated. They were from Spain (1563), Croatia (1598), and Bosnia and Herzegovina (1578). Confirmatory factor analyses and multigroup analyses were conducted. **Results:** The validity of the instrument was confirmed, endorsing its six-factor structure, which includes the dimensions of sending, reasons for sending, victimization by non-consensual forwarding, receiving, forwarding, and reasons for forwarding. Internal consistency across the three countries further underscores the robustness of the SBM-Q. **Conclusions:** This validated questionnaire provides a reliable measure for understanding sexting behaviors and motives in different countries. Cultural nuances are discussed.

### Validación Transcultural del Cuestionario de Comportamientos y Motivos de Sexting (SBM-Q)

### RESUMEN

**Antecedentes:** La proliferación del sexting entre los adolescentes que crecen actualmente alrededor del mundo ha tejido un complejo entramado de expresión y exploración sexual. Sin embargo, sus implicaciones van más allá de la participación consentida, manifestándose en ocasiones como una forma de ciberviolencia. Las diferencias en la prevalencia dificultan aún más la comprensión del sexting juvenil a nivel mundial. Por ello, este estudio pretende proporcionar una herramienta para medir el sexting en jóvenes de diferentes países, validando el SBM-Q, un instrumento exhaustivo que recoge la diversidad de comportamientos y motivos de sexting, con y sin consentimiento, en diferentes países. **Método:** Participaron 4739 estudiantes, de 15 a 25 años, de España (1563), Croacia (1598) y Bosnia y Herzegovina (1578). Se realizaron análisis factoriales confirmatorio y análisis multigrupo. **Resultados:** se confirmó la validez del instrumento, respaldando su estructura de seis factores, que abarca las dimensiones de envío, razones para enviar, victimización de reenvío sin consentimiento, recepción, reenvío y razones para reenviar. La consistencia interna en los tres países subraya la solidez del SBM-Q. **Conclusiones:** Este cuestionario proporciona una medida fiable para comprender los comportamientos y motivaciones de los jóvenes para realizar sexting en diferentes países. Se discuten los matices culturales.

#### Palabras clave:

Comportamientos de sexting

Motivos, Consentimiento

Validación transcultural

Matices culturales

Today's young population growing up around the world is part of a unique generation that has matured in a digitized and interconnected society (Orben, 2020), where increasing value is being placed on the virtual image (Cooper et al., 2016). This proliferation of virtual communications has been accompanied by a global increase in messages with erotic-sexual content (Sweeny & Slack, 2017), so-called sexting, which is defined as the exchange of erotic-sexual text messages, images, or videos over the internet (Ojeda et al., 2022). This popular phenomenon has become a normalized form of intimate communication among young people through which they express and explore their sexuality (Patchin & Hinduja, 2019). However, it is not always done under consensual agreements. When it occurs without consent, i.e. without the agreement of the person who is the subject of the images or texts, it becomes an act of violence that violates and harms that person (Barrense-Dias et al., 2020). This lack of consent can take different forms, including pressure sending or forwarding without the permission of the person who appears in the erotic-sexual content (Naezer & van Oosterhout, 2020).

Sexting prevalence studies have yielded substantially disparate results reflecting an increase in sexting over the years (Madigan et al., 2018). Overall, it seems that passive sexting, i.e. receiving such content, either directly from the creator or forwarded by third parties, is more frequent than active sexting, i.e. sending one's erotic-sexual content or forwarding other people's content without consent (Barrense-Dias et al., 2017; Madigan et al., 2018; Mori et al., 2022). However, a recent meta-analysis examining studies from Europe, North America, Australia, New Zealand, the Middle East, South America, and Africa suggests that prevalence has stabilized in recent years, and is very similar in younger and older adolescents (Mori et al., 2022). It shows that the average prevalence of sending erotic-sexual content is 19.3%, receiving 34.8% and non-consensual forwarding 14.5%. Despite this, depending on the study these rates can be much larger, e.g., higher than 50% in sending (Dodaj et al., 2020; Maheux et al., 2020), higher than 49% in receiving (Douglass et al., 2020; Woodward et al., 2017), or higher than 25% in non-consensual forwarding (Penado et al., 2019; Strassberg et al., 2017). Hence, differences in measurement instruments make comparison between studies difficult (Barrense-Dias et al., 2017; Madigan et al., 2018).

The forms used to measure sexting in young people include the use of direct questions (Casas et al., 2019; Choi et al., 2016; Gewirtz-Meydan et al., 2018; Ojeda et al., 2019; Temple & Choi, 2014) and, to a lesser extent, validated scales (e.g., Esparza et al., 2020; Fajardo et al., 2013; Galanis et al., 2023; Penado et al., 2019; Vizzuetth-Herrera et al., 2015). Specifically, among the scales validated in young people, some assess behaviors related to sexting within a broader phenomenon such as cyberdating violence (Sánchez-Jiménez et al., 2023) and others focus exclusively on analyzing the attitudes of young people (Rodríguez-Castro et al., 2017) or the opinions and concerns of adolescents to send and receive this type of content (Fajardo et al., 2013). Other studies look exclusively at the prevalence of sending (Gámez-Guadix & Mateos-Pérez, 2019; Rodríguez-Castro et al., 2021), others include receiving (Dir, 2012; Gil-Llario et al., 2020) or also include other types of behavior, such as forwarding and posting in young people (Esparza et al., 2020; Penado et al., 2019). Others, meanwhile, focus on the study of the motives for sexting (Galanis et al., 2023). The scale developed by Vizzuetth-Herrera et al. (2015) does look at young people for

both prevalence and some motives, but only includes sending and receiving and focuses on the formal partner context. Moreover, the scale developed by Del Rey et al. (2021) validated in adolescents includes both the assessment of the prevalence of sending, receiving, and forwarding, including not only the aggression of non-consensual forwarding but also victimization by non-consensual forwarding, as well as the reasons for active sending and forwarding behaviors, being able to know the context in which they occur, mainly whether they occur with or without consent. In view of the above, it would be useful to go further, testing whether an instrument that analyzes both prevalence and motives for sexting is also valid in other countries (Baumgartner et al., 2014; Dodaj et al., 2022; Gassó et al., 2021).

Thus, given the need for a scientifically validated scale in more than one country which allows understanding this phenomenon in its full extent, considering not only its consensual but also its non-consensual dimension to prevent its consequences (Van Ouytsel, 2020; Van Ouytsel et al., 2017), this study aims to achieve the following objectives: 1) To confirm the psychometric properties of the Sexting Behaviors and Motives Questionnaire (SBM-Q) in a young sample from Spain; 2) To test whether the psychometric properties of the Sexting Behaviors and Motives Questionnaire (SBM-Q) are also valid in a young sample from Croatia; and 3) To assess whether the psychometric properties of the Sexting Behaviors and Motives Questionnaire (SBM-Q) are also valid in a young sample from Bosnia and Herzegovina.

Based on the previous literature, where sending, receiving, and forwarding are considered as the main sexting behaviors, the structure of the instrument is expected to be valid and consistent across the three countries (Barrense-Dias et al., 2017, 2020; Holfeld et al., 2023; Mori et al., 2022; Schokkenbroek et al., 2023; Strassberg et al., 2017). This finding would provide a comprehensive and validated instrument to measure sexting behaviors and motives in different countries.

## Method

### Participants

In total, 4739 students (62.8% female, 36% male, and 0.8% other identities, such as bigender, agender, gender fluid, non-binary gender or unclear), aged 15-25 years ( $M = 18.08$ ;  $SD = 2.57$ ) from Spain, Croatia, and Bosnia and Herzegovina participated in this study. Specifically, 1563 students from Spain (55.8% female, 43.2% male, and 1% other identities;  $M_{age} = 16.98$ ;  $SD_{age} = 1.96$ ), 1598 from Croatia (62.3% female, 36.4% male, and 0.6% other identities;  $M_{age} = 18.21$ ;  $SD_{age} = 2.71$ ) and 1578 from Bosnia and Herzegovina (70.2% female, 28.5% male, and 0.6% other identities;  $M_{age} = 19.02$ ;  $SD_{age} = 2.56$ ).

### Instruments

For the purposes of this research, sociodemographic data were collected on country, nationality, school, grade, age, and gender. Gender was measured by asking them directly to select which gender they identified with, whether girl, boy or other, and if they selected other, they were asked to write specifically which one.

Sexting was assessed using the Sexting Behaviors and Motives Questionnaire (SBM-Q; Del Rey et al., 2021), which consists of 39

Likert-type items with five response options in terms of frequency, from “0 = *Never*” to “4 = *Daily*”, assessing different experiences of sexting in the past 12 months. The items were distributed into six dimensions: sending, motives for sending, victimization by non-consensual forwarding, receiving, forwarding, and motives for forwarding. The first dimension comprises six items addressing the sending of erotic-sexual content, differentiating between the type of sexual content and the relationship of those involved. The second dimension comprises nine items on the motives for sending. The third factor includes five items on being a victim of non-consensual forwarded content, considering the type of relationship between the victim and the perpetrator(s). The fourth factor comprises six items and covers the receiving of erotic-sexual content, also distinguishing between the type of content and the relationship of those involved. The fifth factor comprises four items addressing active forwarding (when you are the one doing the action) and passive forwarding (when you receive this forwarded erotic-sexual content about someone else), differentiating between the type of content forwarded. The final factor refers to the motives for active forwarding. In all factors of the questionnaire, a high score indicates a higher frequency of what it measures.

For the purposes of this study, the Spanish version of the instrument was used and, in addition, it was translated into Croatian, the official language of Croatia and Bosnia and Herzegovina, following the following steps: 1) direct translation of the English version of the SBM-Q into the Croatian version by two independent bilingual persons; 2) back-translation of the Croatian version into the original English version by two independent bilingual persons; and 3) subsequent comparison of the original version and the back-translation. Any discrepancies in the back-translation were resolved by communication between the translators, resulting in the final Croatian translation of the questionnaire.

The items of the instrument can be consulted here: <https://doi.org/10.6084/m9.figshare.26309899.v1>. The overall scale has excellent internal consistency ( $\alpha_{\text{Total}} = .93$ ;  $\alpha_{\text{Spain}} = .91$ ;  $\alpha_{\text{Croatia}} = .94$ ;  $\alpha_{\text{Bosnia and Herzegovina}} = .93$ ). The internal consistency of each dimension of the instrument in each country is provided in the Results section.

## Procedure

This study was approved by the competent authorities in each country. In Spain, by the local authorities of the city of Seville and the Ethics Committee of the University of Seville (2563-N-20). In Croatia, by the Department of Psychology of the University of Zadar and the Ministry of Science and Education (533-05-21-0004). In Bosnia and Herzegovina, by the Institutional Review Board of the University of Mostar (01-207/20) and the Ethics Committees of the local authorities of the Ministry of Education and Culture of the Sarajevo Canton (11-04/01-34-24966/21), the Ministry of Education, Science, Culture and Sport of the Canton of Western Herzegovina (07-02-49-236-2/21), the Ministry of Education, Science, Culture and Sport of the Canton of Herzegovina-Neretva (05-02-35-365/21) and the Ministry of Education and Culture of the Republic of Serbia (07.05/059-1020-2/21).

In the three participating countries, this study is part of a larger project. In Spain, informed consents were handled through the schools, which, in the case of minors, requested consent from the families. In Croatia, young people over 16 years of age give their

consent independently to research procedures. In Bosnia and Herzegovina there are no postulated principles, so we follow them as in Croatia. In the case of minors under 16 years of age, written consent was obtained from their parents/guardians, who signed it before the start of the study. In addition, in all countries, considering the consent of the families, consent was also sought from each young participant.

The questionnaires were administered during school hours by researchers or teachers in all three countries. In the case of the samples from Croatia and Bosnia and Herzegovina, school psychologists were also involved, and it was necessary for the young people to have access to the Internet and to be able to use a cell phone to participate. The students received instructions emphasizing the anonymous and voluntary nature of participation, the confidential treatment of data and the importance of giving honest answers.

## Data Analysis

The six-dimensional model was tested by confirmatory factor analysis (CFA). Given the ordinal nature of the variables and the absence of multivariate normality, the methods used were the Robust Maximum Likelihood (RML), the Satorra-Bentler Scaled Chi-Square test, and the Comparative Fit Index (CFI), all of which are recommended for this type of data (Flora & Curran, 2004). To calculate the fit of the models, the indices recommended by Hu & Bentler (1999) were used. Specifically, the Bentler-Bonett unstandardized fit index (BBNFI), the comparative robustness of fit index (CFI) with a cut-off value  $> 0.95$ , and the root mean square error of approximation (RMSEA) statistic with a cut-off value  $< 0.08$ . The reliability of the different dimensions, as well as of the entire scale, was assessed using the Cronbach Alpha coefficient performed in the EQS 6.3 software (Bentler, 2006).

This was followed by multi-group analyses by country. To test the invariance of these models, a hierarchical strategy was used. First, a model was tested without any restrictions (configural model); second, a model in which equal factor loadings were tested on all factor items (measurement model); and third, a model in which, in addition to equal factor loadings, factor variances, and covariances were tested. The cut-off criterion for measuring non-invariance, following Chen's (2007) recommendations, was a change of  $\geq 0.010$  in the cut-off value for CFI, complemented by a change of  $> 0.015$  in the cut-off value for RMSEA. In addition, the new scaled difference for the Satorra & Bentler (2010) scaled Chi-square test was used when comparing models (Bryant & Satorra, 2012).

## Results

The construct validity of the instrument was tested in three countries, Croatia, Bosnia and Herzegovina, and Spain since the sample included a population of a higher age range than that participating in the initial Spanish validation of the instrument (Del Rey et al., 2021). Thus, as can be seen in Table 1, the six-factor model shows an optimal fit for the three countries, indicating adequate values in the indices, NNFI, CFI, and RMSEA.

Subsequently, the configurational, measurement, and structural invariance of the model by country was tested by comparing the countries two by two. Specifically, Croatia was compared with Spain, Bosnia and Herzegovina with Spain, and Croatia with

**Table 1**  
Confirmatory Factor Analysis

Country	$\chi^2$ S-B	NNFI	CFI	RMSEA
Spain	2210.376; $p < .001$	.970	.972	.041
Croatia	2768.945; $p = .002$	.967	.969	.034
Bosnia and Herzegovina	2067.583; $p < .001$	.959	.959	.048

Bosnia and Herzegovina. In the Spain-Croatia comparison (see Table 2), evidence of configurational invariance was obtained. However, measurement invariance (comparison between models 1 and 2) shows no significant differences and structural invariance (comparison between models 1 and 3) did find differences. Regarding measurement invariance, even if the model tested could be considered equivalent, the measurement model cannot be considered fully invariant due to the results of significant differences in the adjusted  $\chi^2$  S-B (see Table 2). However, considering that the increases in CFI and RMSEA were below the criteria recommended by Chen (2007), both models could be considered equivalent ( $\Delta$ NNFI = -0.002;  $\Delta$ RCFI = 0.002;  $\Delta$ RMSEA = 0.001). Regarding structural invariance, the adjusted  $\chi^2$  S-B test showed significant differences between models 3 and 1. Moreover, the differences in NNFI, CFI, and RMSEA also suggest that, in this case, structural invariance is not acceptable between the two countries ( $\Delta$ NNFI = -0.021;  $\Delta$ RCFI = -0.022  $\Delta$ RMSEA = 0.016).

In the Spain and Bosnia and Herzegovina comparison (see Table 3), tests of configurational invariance have been obtained. As in the previous comparison, the measurement invariance between models 1 and 2 shows no significant differences and the structural invariance (comparison between models 1 and 3) does. Similarly, regarding measurement invariance, the measurement model cannot be considered fully invariant due to the significant difference in results of the adjusted  $\chi^2$  S-B (Table 3). However, as in the previous comparison, if we consider that the increases in NNFI, CFI, and RMSEA were below the criteria recommended by Chen (2007), both models could be considered equivalent ( $\Delta$ NNFI = 0;  $\Delta$ RCFI = 0;  $\Delta$ RMSEA = 0.001). Regarding structural invariance, the adjusted  $\chi^2$  S-B test showed significant differences between models 3 and 1.

Moreover, the differences in NNFI, CFI, and RMSEA also suggest that, in this case, structural invariance is not acceptable between the two countries ( $\Delta$ NNFI = -0.020;  $\Delta$ RCFI = -0.014;  $\Delta$ RMSEA = 0.018).

Regarding the Croatia and Bosnia and Herzegovina comparison (see Table 4), the same differences are obtained as in the two previous comparisons, the measurement invariance between models 1 and 2 shows no significant differences and the structural invariance between models 1 and 3 does find significant differences. Similarly, concerning the measurement invariance, the measurement model cannot be considered fully invariant due to the results of the significant differences of the adjusted  $\chi^2$  S-B (see Table 4). However, like the previous comparison, if we consider that the increases in NNFI, CFI, and RMSEA were below the criteria recommended by Chen (2007), both models could be considered equivalent ( $\Delta$ NNFI = 0.001;  $\Delta$ RCFI = 0;  $\Delta$ RMSEA = 0.001). Regarding structural invariance, the adjusted  $\chi^2$  S-B test showed significant differences between models 3 and 1. Moreover, the differences in NNFI, CFI, and RMSEA also suggest that, in this case, structural invariance is not acceptable between the two countries ( $\Delta$ NNFI = -0.020;  $\Delta$ RCFI = -0.014;  $\Delta$ RMSEA = 0.018).

Based on the results obtained, the factor weights of the dimensions and items that make up the scale about its six-dimensional structure were considered and compared in the three countries. Specifically, in the Spanish sample, the dimensions with the highest weights are reasons for sending, victimization by non-consensual forwarding, and reasons for forwarding. In the sending dimension, the items of sending videos or images to somebody they fancied, and sending text messages to somebody they fancied stand out. In the sending motives dimension, items related to peer pressure and threats/blackmail stand out. In the victimization by non-consensual forwarding dimension, items indicating that the content has been forwarded by a friend (girl) and by a friend (boy) stand out. In the receiving dimension, items about receiving text messages from somebody they fancied and receiving videos or images from somebody they fancied stand out. In the forwarding dimension, items related to actively forwarding videos or images and text messages stand out. In the forwarding motives dimension,

**Table 2**  
Multi-Group Analysis by Country (Spain-Croatia)

Spain - Croatia	$\chi^2$ S-B ( $\Delta \chi^2$ S-B)	DF (Adf)	$p$	NNFI	CFI	RMSEA
Model 1	3510.456	941		.973	.975	.041
Model 2	3628.112 (117.656)	1006 (65)	.001	.971	.973	.042
Model 3	3932.387 (304.275)	1112 (106)	.001	.950	.951	.058

**Table 3**  
Multi-Group Analysis by Country (Spain-Bosnia and Herzegovina)

Spain - Bosnia and Herzegovina	$\chi^2$ S-B ( $\Delta \chi^2$ S-B)	DF (Adf)	$p$	NNFI	CFI	RMSEA
Model 1	3320.456	923		.980	.979	.039
Model 2	3378.460 (58.04)	998 (65)	.001	.980	.979	.040
Model 3	3782.387 (403.927)	1086 (88)	.001	.960	.965	.058

**Table 4**  
Multi-Group Analysis by Country (Croatia-Bosnia and Herzegovina)

Croatia - Bosnia and Herzegovina	$\chi^2$ S-B ( $\Delta \chi^2$ S-B)	DF (Adf)	$p$	NNFI	CFI	RMSEA
Model 1	3010.857	871		.971	.978	.036
Model 2	3078.901 (68.04)	901(30)	.001	.972	.978	.037
Model 3	3582.567 (503.666)	1206 (305)	.002	.952	.953	.052



items related to upsetting the person appearing in the content and due to pressure from friends stand out (see Figure 1). Table 5 shows the correlations between latent variables in the Spanish sample.

In the Croatian sample, the dimensions with the highest weights are victimization by non-consensual forwarding, receiving, and sending. In the sending dimension, items about sending text messages to somebody they fancied and sending videos or images to your partner/ex-partner stand out. In the sending motives dimension, items related to flirting and because they thought it was a good idea or they looked attractive. In the dimension of victimization by non-consensual forwarding, items indicating that the content had been forwarded by a friend (girl), a friend (boy) or by other people stand out. In the receiving dimension, items about receiving text messages from somebody they fancied and receiving videos or images from somebody they fancied stand out. In the forwarding dimension, items related to active forwarding of text messages and forwarding of videos or images stand out. In the forwarding motives dimension, items related to upsetting the person appearing in the content and jealousy stand out (see Figure 2). Table 6 shows the correlations between latent variables in the Croatian sample.

In the Bosnian and Herzegovinian sample, the dimensions with the highest weights are sending, forwarding, and victimization by non-consensual forwarding. In the sending dimension, items about sending text messages to somebody they fancied and sending videos or images to somebody they fancied stand out. In the sending motives dimension, items related to peer pressure and because most people do it stand out. In the dimension of victimization by non-consensual forwarding, items indicating that the content has been forwarded by other people and by the girlfriend/ex-girlfriend or girl he/she fancied stand out. In the receiving dimension, items about receiving text messages from somebody they fancied and receiving videos or images from somebody they fancied stand out. In the forwarding dimension, items related to actively forwarding text messages and

**Table 5**  
*Correlations Among Latent Variables With Robust Statistics in the Spanish Sample*

	1	2	3	4	5	6
1. Sending	-					
2. Reasons for sending	.72	-				
3. Receiving	.52	.80	-			
4. Victimization by non-consensual forwarding	.79	.62	.42	-		
5. Forwarding	.63	.72	.72	.55	-	
6. Reasons for forwarding	.48	.76	.78	.39	.71	-

**Table 6**  
*Correlations Among Latent Variables With Robust Statistics the Croatian Sample*

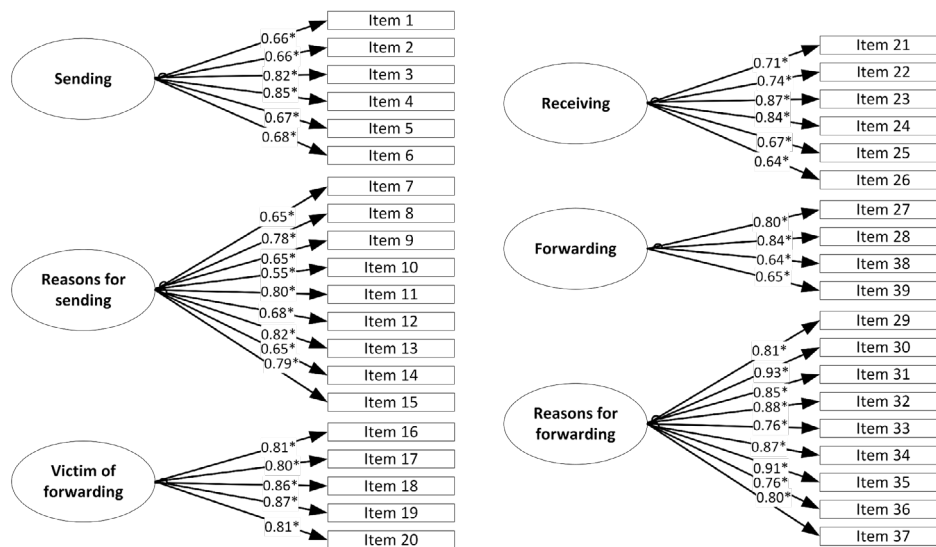
	1	2	3	4	5	6
1. Sending	-					
2. Reasons for sending	.62	-				
3. Receiving	.36	.69	-			
4. Victimization by non-consensual forwarding	.77	.51	.49	-		
5. Forwarding	.37	.65	.68	.37	-	
6. Reasons for forwarding	.31	.30	.78	.24	.70	-

videos or images stand out. In the forwarding motives dimension, items related to jealousy and accidental forwarding stand out (see Figure 3). Table 7 shows the correlations between latent variables in the Bosnian and Herzegovinian sample.

Finally, in the comparison of the three countries, the internal consistency of each subscale was tested, with all of them being above .80. Specifically, in the Spanish sample, the internal consistency for the sending dimension was .901; .861 for reasons for sending; .891 for victimization by non-consensual forwarding; .904 for receiving; .915 for forwarding; and .823 for reasons for forwarding.

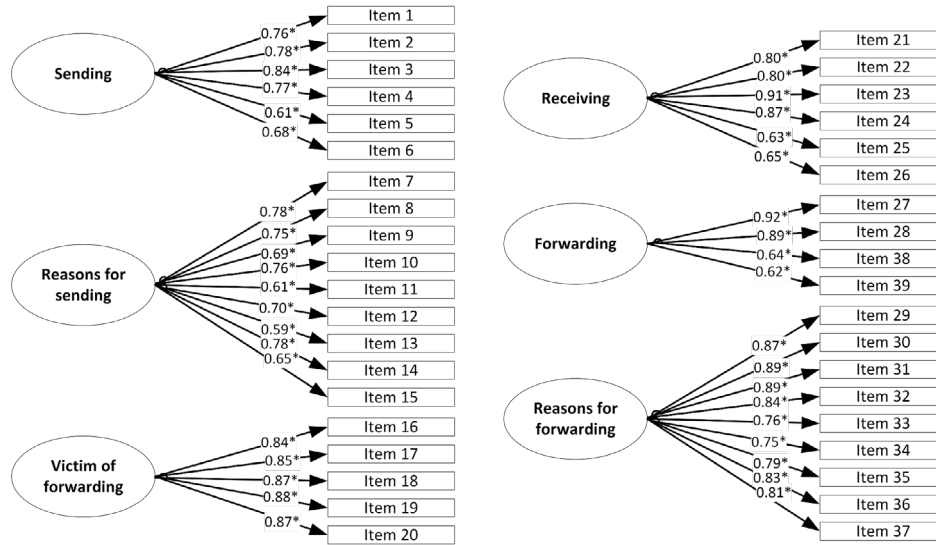
In the Croatian sample, the internal consistency for the sending dimension was .894; .863 for reasons for sending; .894 for

**Figure 1**  
*Confirmatory Factor Analysis of the Six-Factor Model in the Spanish Sample*



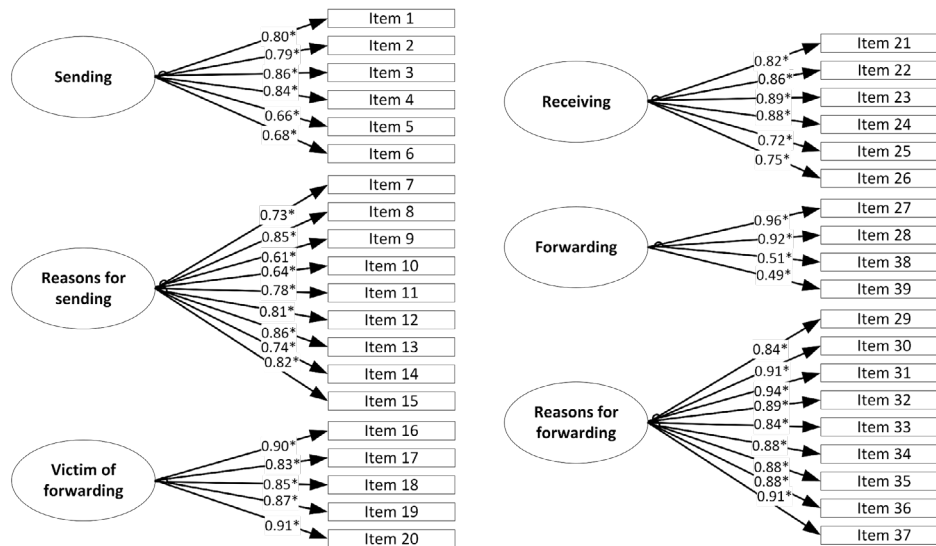
Note. All latent variables in the Spanish sample were correlated (see Table 5).

**Figure 2**  
Confirmatory Factor Analysis of the Six-Factor Model in the Croatian Sample



Note. All latent variables in the Spanish sample were correlated (see Table 6).

**Figure 3**  
Confirmatory Factor Analysis of the Six-Factor Model in the Sample From Bosnia and Herzegovina



Note. All latent variables in the Spanish sample were correlated (see Table 7).

victimization by non-consensual forwarding; .902 for receiving; .911 for forwarding; and .825 for reasons for forwarding.

In the sample from Bosnia and Herzegovina, the internal consistency for the sending dimension was .904; .865 for reasons for sending; .895 for victimization by non-consensual forwarding; .903 for receiving; .913 for forwarding; and .821 for reasons for forwarding.

### Discussion

The main objective of this study was to test the validity and psychometric structure of a questionnaire that includes the different sexting behaviors and motives for engaging in sexting, the Sexting Behaviors and Motives Questionnaire (SBM-Q; Del Rey et al., 2021), in a sample of young people from different countries: Spain,

**Table 7**  
Correlations Among Latent Variables With Robust Statistics in the Bosnian and Herzegovinian Sample

	1	2	3	4	5	6
1. Sending	-					
2. Reasons for sending	.70	-				
3. Receiving	.57	.73	-			
4. Victimization by non-consensual forwarding	.74	.65	.47	-		
5. Forwarding	.64	.67	.69	.69	-	
6. Reasons for forwarding	.54	.76	.72	.47	.73	-

Croatia, and Bosnia and Herzegovina. The results show the validity of this instrument, the adequacy of its six-factor structure, including the dimensions of sending, reasons for sending, victimization by non-consensual forwarding, receiving, forwarding and reasons for forwarding, and its internal consistency in the three countries.

The results in the Spanish sample are similar to those obtained in the original validation with adolescents (Del Rey et al., 2021), which also makes it a valid instrument to assess sexting in youth. The model was tested for configurational, measurement, and structural invariance by country, yielding evidence of configurational invariance, where measurement invariance shows no significant differences, but structural invariance shows significant differences. Therefore, the instrument is valid in all three countries, extending its usefulness in different populations.

It is interesting to consider the nuances contributed by young people in each country, where it is noted they give more value to different dimensions and items. In terms of dimensions, victimization by non-consensual forwarding stands out as one of the most important in all three countries. This finding is consistent with previous studies that identified non-consensual forwarding as a new type of cyberviolence that is generating great concern and consequences (Maes et al., 2023). In Spain, the dimensions of motives, both sending and forwarding, also stand out, while in Croatia and Bosnia and Herzegovina, behaviors have a greater weight. Primary sexting –sending and receiving– (Molla Esparza et al., 2023) in Croatia and active sexting –sending and forwarding– (Barrense-Dias et al., 2017) in Bosnia and Herzegovina.

Particularly in terms of the items, no different nuances were found in the receiving and forwarding dimensions. In all three countries, receiving content, whether messages, images or videos, from somebody they fancied, and forwarding both types of content are the most important. In line with previous studies, this reinforces the argument that studies on sexting should not only include the sending, but also the receiving and forwarding of received content in order to understand its complexity (Madigan et al., 2018; Mori et al., 2022; Schokkenbroek et al., 2023).

Concerning sending sexting, there are also no different nuances between the countries of Spain and Bosnia and Herzegovina, where young people give greater weight to sending content to somebody they fancied, regardless of the type of content. In Croatia, sending text messages to somebody they fancied also stands out, but sending images or videos has a greater weight towards partners or ex-partners. This suggests that Croatian participants may prefer greater mutual trust and have a deeper understanding of building a secure relationship, coupled with an awareness of potential consequences. This tendency in Croatia could be related to the comprehensive sexuality education that covers various aspects, including biological

elements of sexual behavior, love, sexual abuse, gender-based violence, pregnancy/birth, and sexual orientation (Picken, 2020). This education is likely to increase awareness of the risks associated with sending videos or photos to people they fancy, which makes Croatian participants may prefer to share them with partners, people with whom they have already built a trusting relationship, rather than just people they are attracted to in order to reduce the potential negative consequences. Conversely, the limited sexual and preventive education in Bosnia and Herzegovina regarding sexting and violence in young people's relationships (Dodaj et al., 2022) and in Spain (Jiménez-Ríos et al., 2023) may contribute to a lower perception of risk when sharing different content with people they fancy.

In terms of the items in the victimization by non-consensual forwarding dimension, among both Spanish and Croatian youths, victimization by friends stands out, regardless of gender, while among Bosnian and Herzegovinian youths various actors stand out, including other people, as well as girlfriends/(ex)girlfriends or the girl to whom the participant is attracted. Although one might expect that victimization by non-consensual forwarding would be more heavily weighted by the forwarding of content by a partner or someone the participant is attracted to (Beckmeyer et al., 2019), the results from the Spanish and Croatian samples suggest that friends are also important (Holfeld et al., 2023). Indeed, recent research shows that victims often knew the perpetrator, most of them being people close to them, such as partners or friends (Brighi et al., 2023). However, the key to the consequences of the victimization of non-consensual forwarding lies in the sexual double standard (Symons et al., 2018). Conservative norms, ideas and values around sexuality operate in sexting, as well as the mandates of sexual freedom, self-objectification and readiness for pleasure. These contradictory norms fall mostly on women (Pérez-Domínguez, 2020). Young women appear to receive conflicting messages that complicate their free decision making, fearing greater social repercussions, and this does not extend to boys (Bonilla et al., 2021; Kalish, 2023). More and more countries are taking legal action in this regard, for example the Croatian legal system actively addresses breach of trust and unauthorized distribution of sexually explicit content (Kazneni zakon u Republici Hrvatskoj, NN 84/21, 2023) and the Spanish one the non-consensual dissemination of images (Ley Orgánica 10/1995, de 23 de Noviembre, del Código Penal, 1995).

On the reasons for sending, in young people from Croatia, flirting and the desire to appear attractive stand out mainly. In those from Spain and Bosnia and Herzegovina, on the other hand, highlight a greater influence of peer pressure, threat or the perceived normalization of such behavior among peers (Kopecký, 2015; Symons et al., 2018). Spain and Bosnia and Herzegovina are characterized by collectivist cultures (Fernández et al., 2000; Klarin et al., 2012), while Croatia, which tended towards collectivism in the 1990s, has recently experienced a shift towards individualism, possibly influenced by recent EU membership (Gobel et al., 2018) and global economic growth (Podrug et al., 2014). Considering that in cultures where the collective is emphasized over the individual, norms seem to exert a greater influence on behavior (Lapinski & Rimal, 2005), the data on a stronger influence of social norms on the reasons for sexting in the Spanish and Bosnian and Herzegovinian sample compared to the Croatian sample is understandable. This is consistent with previous studies indicating that peer norms play a

crucial role in the reasons why adolescents post sexual pictures of themselves on the Internet (Baumgartner et al., 2015; Ojeda et al., 2022). Modern Croatian culture supports the trend towards sexual permissiveness among young people (Štulhofer et al., 2005), which could lead to a normalization of sexting as a means of expressing sexual interest in intimate relationships and physical appearance.

Regarding the reasons for non-consensual forwarding, both in Spain and Croatia, the main ones are related to annoying the person appearing in the content (van Oosten & Vandenbosch, 2020). This could indicate a similar perspective to bullying, as in Spain and Croatia in particular, friends who forward content carry more weight, possibly with the intention to hurt or simply to have fun. This fits with the idea that the motivation to have fun is similar to that of bullying and is often aimed at making peers laugh (Barrense-Dias et al., 2020). On the other hand, in Croatia and Bosnia, jealousy also stands out as a motive. In line with the literature, the act of forwarding appears to be a form of revenge in break-ups (Walker & Sleath, 2017), with jealousy playing a central role in revenge. In this case, it is again relevant to consider that, due to the sexual double standard, the consequences are usually more severe for girls than for boys (Kalish, 2023). In addition, the importance of peer pressure is again underlined in Spain, and in Bosnia forwarding by accident. The prevalence of aggressive behavior could be related to the prevailing social norms of individualism and collectivism (Velki & Kuterovac-Jagodić, 2014), according to which the violation of norms in collective societies can lead to sanctions, possibly making some peer motives less frequent and less widespread in the Bosnian and Herzegovinian sample. In addition to the above findings, Eastern cultures where traditional values are important, such as in Bosnia and Herzegovina, place more emphasis on the recognition of indirect forms of violence, especially in relational contexts, than Western cultures where direct forms are more recognized (Velki & Kuterovac-Jagodić, 2014). In this regard, in the Bosnian and Herzegovinian sample, the strong weight of motivation to accidentally forward sext is also reflected, which supports the above.

Taking all this into account, we can conclude that the SBM-Q is an instrument that has proven to be valid in different countries and gathers and incorporates the recommendations made in the scientific literature (Van Ouytsel et al., 2020). It accurately measures and understands sexting, considering not only consensual and non-consensual behaviors, but also the reasons for active participation (Del Rey et al., 2021). This validated questionnaire provides a valuable tool for future research efforts, allowing for a nuanced examination of sexting behaviors and motives in diverse cultural contexts and facilitating the development of targeted educational and preventive initiatives. Specifically, the SBM-Q has several applications in research and practice. Its inclusion in scientific research provides an opportunity to examine the sexting prevalence across different countries and to discern possible differences, or not, in the engagement of young people in this phenomenon. It also allows exploring the connections between sexting and other areas of sexual behavior, including sexual well-being, sexual satisfaction, and aggressive behaviors, such as cyberviolence or bullying. The questionnaire has potential to serve as a tool to facilitate prediction in intervention studies (e.g., those aimed at reducing sexual violence among adolescents) and to monitor sex education strategies within schools. Additionally, it could prove valuable in studies involving specific groups like sexual minorities (e.g., LGBTQ) or those prone

to violence, such as adolescents exposed to revenge pornography. Furthermore, the instrument is adaptable to various cultural contexts, aiding in the comprehension of the socio-cultural factors influencing sexual behaviors related to the exchange of sexual content. Further validation studies in the mentioned settings are essential to fully harness its potential.

When interpreting the results, we must consider that adolescents from Spain and Croatia came from large cities, while adolescents from Bosnia and Herzegovina came from several smaller cities, which might influence the results, as studies suggest that bullying is more common in larger cities (Velki & Kuterovac-Jagodić, 2014). Also, among the limitations of this study it is important to consider the use of convenience sampling and self-report measures. Another limitation is that the sample of adolescents from Croatia and Bosnia and Herzegovina are not gender-balanced. As females are often overrepresented in student sex research (Dickinson et al., 2012), it is possible that the means of some dimensions of sexting in this study are overestimated and others underestimated. It would also be essential to analyze gender differences in future research.

### Author Contributions

**Mónica Ojeda:** Conceptualization, Formal analysis, Methodology, Writing – Original draft, Writing – Review & Editing. **Arta Dodaj:** Funding acquisition, Project administration, Conceptualization, Methodology, Supervision, Writing – Review & Editing. **José A. Casas:** Formal analysis, Methodology, Writing – Review & Editing. **Kristina Sesar:** Conceptualization, Methodology, Writing – Review & Editing. **Rosario Del Rey:** Funding acquisition, Project administration, Conceptualization, Methodology, Supervision, Writing – Review & Editing.

### Funding

This work was supported by grant UIP-2020-02-3553 funded by the Croatian Science Foundation, and grant PID2020-115913GB-I00 funded by MCIN/AEI/10.13039/501100011033. These funding sources had no role in the design of this study, data collection, management, analysis, and interpretation of data, writing of the manuscript, and the decision to submit the manuscript for publication.

### Declaration of Interests

The authors declare that there is no conflict of interest.

### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon request.

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