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Recommended Instruments for Analyzing Cyber Dating Violence: A Systematic Review

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Abstract. Cyber dating violence is an emerging form of dating violence that may have serious health effects on adolescents and young people, and in recent years interest in its study has increased. In order to understand completely the nature and magnitude of the problem, a clear understanding of the concept, constructs and well-established measurement tools are needed. The goal of this study was to analyze the measurement instruments of cyber dating violence in adolescents and young adults, and to determine which are the best suitable to use. To accomplish these objectives a systematic review was carried out. After reviewing the literature, twenty-four measurement instruments were analyzed, with important differences found between them in terms, constructs, dimensions and measurement attributes, as well as differences in their assessed psychometric properties. Once the methodological quality evaluation of the instruments was carried out following COSMIN (COnsensus based Standards for the selection of health Measurement Instruments) guidelines, three scales were found to be recommendable depending on the age and cultural context of participants: Cyber Dating Abuse Questionnaire (Borrajo, Gámez-Guadix, Pereda, et al., 2015), Technology-facilitated Abuse in Relationships Scale (Brown & Hegarty, 2021), and Abuse in Teen Relationships (CARPA; Calvete et al., 2021).

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Young people's use of Information and Communication Technologies (ICTs) to communicate and interact with other people has increased in recent decades (Duerksen & Woodin, 2019). Technologies have changed the ways in which young people relate to each other, including dating relationship dynamics. Burke et al. (2011) found that young people use a large number of media and digital tools to develop and maintain dating relationships (e.g., text messages, emails, mobile phones, social networks, or webcams). It is undeniable that the use of ICTs can have important benefits on personal and social levels, as well as positive effects on adolescents' socialization (Caridade et al., 2019), allowing them to explore and define their identity and personality, express themselves and build new relationships (Hinduja & Patchin, 2020). However, these tools may also provide new opportunities for some individuals to exert control over others, given that it is now easier than ever before to stalk someone, collect information on them as well as harass them in multiple contexts (Fernet et al., 2019). Technology has modified the ways in which violence can be perpetrated and suffered, making it immediate, beyond any physical limit, through a wide number of media (e.g., email, instant messaging services and social networks) and with minimal effort, thereby causing a greater impact on the victim, more rapidly and in different areas of his/her life. In this way, along with these changes in relationships, a new form of intimate partner violence has also emerged, called cyber or digital dating violence or abuse (Zweig et al., 2014).

The range of terminology used in the scientific community is currently very wide and varied, probably since it is a relatively recent phenomenon. In the absence of a definitive term, this review proposes that the term to

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use in future studies should be *cyber dating violence* (CDV) because, on the one hand, the term *cyber* denotes a relationship with information technology (encompassing all kinds of technologies relates to the virtual world) and, on the other hand, the term *dating violence* refers to violence in relationships between adolescents or young people, where the members of the couple do not live together, are not financially independent from their parents, and do not have well-established relationships (Ibabe et al., 2020). Cyber dating violence has been defined as a form of control and harassment by the dating partner or ex-partner using new technologies and the media (Zweig et al., 2014). It has also been observed that the definitions of CDV tend to include a list of possible behaviors and different technological media, which is not wholly adequate for clarifying the construct. Rodríguez-Domínguez et al. (2020) pointed out methodological deficiencies in the construction of knowledge in the field of CDV, indicating for example, a lack of attention to manifestations of sexual aggression. Although it is not easy to establish a definitive classification of the different manifestations of CDV due to emerging new behaviors related to technology use, we propose five dimensions. Thus, cyber dating violence is understood in this paper as the perpetration of different types of aggression (psychological direct, control, public harassment, exclusion, and sexual) to the partner or ex-partner in the context of a dating or courtship relationship, via any digital media. Table 1 shows the definitions and examples of the five potential dimensions of the cyber dating violence construct.

To advance research on CDV, it is important not only to have an appropriate conceptualization of CDV but also adequate instruments for its measurement (Cava & Buelga, 2018). Consequently, the objective of this research was to describe the assessment instruments most used in CDV among young couples and to identify the best based on the quality of evidence in their psychometric properties. To achieve this goal, a systematic review was carried out, ensuring transparent and complete reporting of the systematic search. This systematic review can be helpful in understanding the reasons for the differences found in results regarding CDV prevalence rates in all previous reviews (Brown & Hegarty, 2018; Caridade et al., 2019; Cavalcanti & Coutinho, 2019; Rodríguez-Domínguez et al., 2020) since it shows how all the instruments present different conditions in their methodological approaches, which can affect the interpretation of the evidence found in their research. The present review analyzed the quality of psychometric properties using the COSMIN checklist, which takes into account both the methodological quality and results of each psychometric property.

Method

Systematic Review

This systematic literature review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines with a 27-item checklist in order to ensure transparent reporting (Page et al., 2021). The identification, screening, and eligibility of the studies included are outlined in the flow diagram (see Figure 1).

Search Strategies

The bibliographical searches were carried out in three electronic databases: Web of Science (title, abstract, author keyword and keyword plus), Scopus (title, abstract, author keyword), and PsycARTICLES (all text option). Journal articles published in English, Spanish or Portuguese up to July 2021 were selected. During the full-text assessment for eligibility, the reference lists of the selected articles were also reviewed to identify additional studies that were not identified during the bibliographical search. Retrieved articles from three databases were exported to RefWorks in order to make the removal of duplicates much easier. The selection process was carried out by reading abstracts, but sometimes articles were removed after reading the full text.

For the search, 27 terms of CDV were used ("electronic victimization" OR "cyber dating abuse" OR "cyber dating aggression" OR "cyber dating victimization" OR "cyber intimate partner violence" OR "ciberviolencia de pareja" OR "cyber dating violence" OR "ciberviolencia en el noviazgo" OR "digital dating abuse" OR "digital dating violence" OR "digital dating victimization" OR "digital dating aggression" OR "intimate partner violence through electronic mediums" OR "violencia de pareja a través de medios electrónicos" OR "computer mediated communication based teen dating violence" OR "cyber psychological abuse in romantic relationships" OR "intimate partner cyber aggression victimization" OR "virtual intimate partner violence" OR "violencia de pareja online en la adolescencia" OR "violencia de pareja virtual" OR "electronic aggression in emerging adult romantic relationships" OR "electronic intrusion cyber dating aggression" OR "ciberagresión en el noviazgo" OR "electronic dating aggression" OR "technology assisted adolescent violence" OR "technological intimate partner violence" OR "partner directed cyber aggression").

Eligibility Criteria

For this review, the following inclusion criteria were applied: (a) Publications that adopt constructs strictly related to the phenomenon of cyber dating violence

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Table 1. *Terms, Definitions and Examples of Behaviors of Each Dimension of Cyber Dating Violence*

Term of each dimension	Definitions	Examples
A. *Cyber psychological aggression*	Behaviors that are intended to cause harm to the partner, directly insulting or saying unpleasant things or threatening to hurt in a private sphere using technology of information.	• Sending insulting and/or demeaning messages. • Using capital letters to shout.
B. *Cyber control*	Use of electronic means to control the partner/ex-partner, including behaviors related to surveillance or the invasion of privacy of the partner.	• Checking where and with whom the partner is. • Reading messages without permission. • Excessive control behaviors on social networks.
C. *Public harassment*	Publishing threatening, insulting, or harmful messages through social networks, spreading rumors about the partner, showing private or embarrassing photos/videos to humiliate or embarrass victim.	• Publishing inappropriate photos of the partner without permission. • Dissemination compromising information.
D. *Exclusion*	Removing, excluding, or blocking on social networks or friend lists.	• Block on a Web site such as Facebook. • Remove from WhatsApp list. • Exclude from top friend list.
E. *Cyber sexual aggression*	Pressuring and threatening partners to have sex with him/her or do sexual things in person or virtual when he/she knew the partner did not want to.	• Threaten to distribute sexual images to have sex. • Unwanted sexual things online.

(e.g., dating partners); (b) studies on the adolescent and/or young population (with a maximum mean age of 28–30 years or slightly higher); (c) publications in English, Spanish and Portuguese. The first criterion is related to the fact that some studies analyze this phenomenon through constructs in nonintimate relationships such as cyberbullying (e.g., cyber aggression, cyber violence).

The exclusion criteria applied were: (a) Studies analyzing cyber abuse in nonintimate relationships (e.g., between peers); (b) theoretical articles or qualitative studies; (c) studies not including cyber dating violence measures; (d) studies on a mostly adult population; and (e) studies focused on single behavior of cyber dating violence (e.g., electronic intrusion, sexting coercion). This last criterion is related to the fact that some publications only analyze single behavioral dimensions. Since cyber dating violence is conceptualized as multidimensional, only studies that explored this phenomenon's multidimensionality were included. Figure 1 shows the literature search flowchart and the selection of articles from the analyzed sources, with a total of 78 scientific articles addressing CDV obtained. Table 2 lists all psychometric studies using the instruments. Moreover, the remaining studies (which used CDV instruments but were not psychometric studies) are presented in Appendix A. All studies have the corresponding reference list, but the psychometric studies analyzed in the paper have an asterisk in the References section.

Analysis of the Psychometric Evidence of the Instruments

Some of the standards developed in the COSMIN Guide (COnsensus based Standards for the selection of health Measurement INstruments) were used to evaluate the psychometric properties of the analyzed instruments (Mokkink et al., 2018) following three steps:

First step: *Assessment of the methodological quality of the studies.* The COSMIN Risk of Bias checklist is applied. The term "risk of bias" refers to whether the results, based on the methodological quality of each study, are trustworthy. This checklist contains different standards referring to design requirements of studies on measurement properties. For each measurement property a COSMIN box is developed, containing different items, named standards, which are needed to assess the quality of a study on that specific measurement property. For example, Standard 1 on Structural Validity indicates that to determine the structure of the instrument a Confirmatory Factor Analysis (Rating: Very good) is preferred over Explorative Factor Analysis (Rating: Adequate). COSMIN Risk of Bias checklist contains ten boxes with standards for: (a) Instrument development (35 items), (b) content validity (31 items), (c) structural validity (4 items), (d) internal consistency

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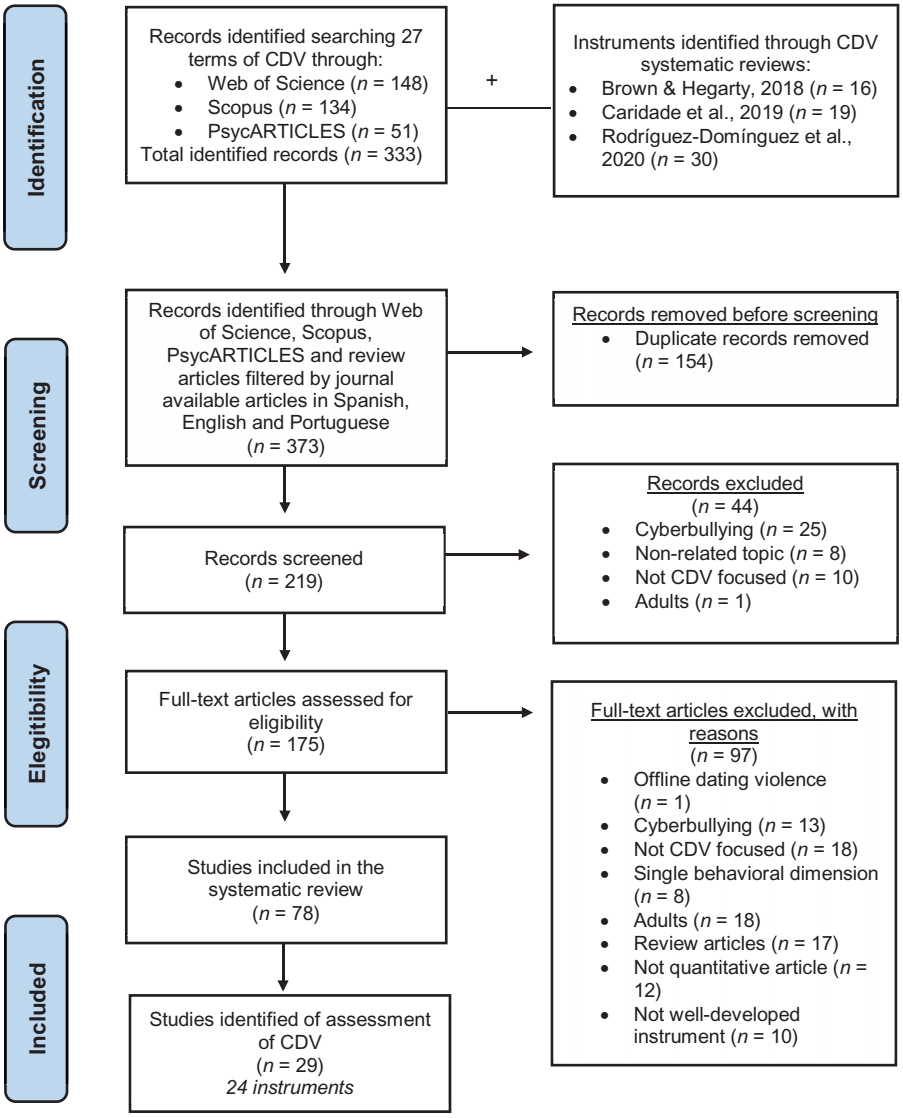

Figure 1. Flowchart of the Review Process according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses

(5 items), (e) cross-cultural validity (4 items), (f) reliability (8 items), (g) measurement error (6 items), (h) criterion validity (3 items), (i) hypothesis testing for construct validity (7 items), and (j) responsiveness (13 items). The evaluation of these properties was achieved by rating 116 items on a four-point scale (*very good*, *adequate*, *doubtful*, *inadequate quality*, or *not applicable*). An overall rating for methodological quality was provided for each reported psychometric property by taking the lowest rating of any standard in the box (i.e., "the worst score counts" principle).

Second step: *Assessment of the reported psychometric properties quality.* The results of eight psychometric properties (content validity, structural validity, internal consistency, cross-cultural validity, reliability, criterion validity, hypothesis testing, and responsiveness) should be based on the results of all available studies per measurement property in order to determine whether each measurement property of the instrument is sufficient (+) within the pre-established quality criteria, insufficient (–) outside the pre-established quality criteria, inconsistent (±), or indeterminate (?) or less rigorous evidence or procedures that did not meet the pre-established quality criteria (Terwee et al., 2007). Additional details on these criteria can be found in the COSMIN manual for systematic reviews of instruments (Mokkink et al., 2018) (See Appendix B).

Third step: *Best evidence synthesis: the GRADE approach.* The quality of the overall evidence of each category was rated on a four-point scale (*high*, *moderate*, *low*, or *very low*), and instruments were categorized on the overall quality of evidence and results: Category A (instruments in this category will be recommended for

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use because results obtained with this instrument can be trusted), Category B (instruments may be used with caution, but require further research) and Category C (use of the measures in this category is not recommended). In cases classified as indeterminate or inconsistent it was not possible to assess quality with the GRADE approach. The recommended instruments which are useful and valid for measuring the same construct are those with higher COSMIN scores.

Table 2 shows the characteristics of the selected instruments and psychometric studies in this systematic review. The results of each study and instrument with respect to methodological quality and reported psychometric properties quality rating are shown in Table 3. A trained researcher analyzed the methodological quality and psychometric properties quality of 29 studies. However, the best evidence synthesis was done by consensus between two trained researchers, specifically, the overall assessment of each instrument (total sufficient rating, quality of evidence and category).

Results

The search strategy resulted in 333 articles retrieved from three different databases and other systematic reviews. From this, 154 duplicates were found, resulting in 219 articles as shown in Figure 1. After assessing articles for inclusion and exclusion criteria, a total of 24 instruments and 29 psychometric studies were included in the methodological evaluation using the COSMIN Risk of Bias checklist.

General Characteristics of the Selected Instruments

In Table, 2 characteristics of the psychometric studies corresponding to 24 instruments are shown. Most of the studies were conducted in the USA ($n = 12$), followed by Spain ($n = 7$), while the remaining studies were distributed in different countries (Mexico, England, Australia, Canada, Chile or Portugal). Important differences among the instruments in the evaluated aspects (types of digital media, perspective –perpetration vs. victimization, and time frame) were found. Moreover, the dimensions of CDV analyzed in these studies were very varied. In some studies, the CDV construct was underrepresented by focusing on measuring specific types of cyber dating violence (Rodríguez-Domínguez et al., 2020). Control behaviors, cyber psychological abuse and harassment were most commonly studied. It seems that there was no consensus regarding the construct of CDV, and the variations in dimensions across instruments hinder cross-study comparison. According to the categorization defended in the present study, the dimensions less taken into account in the analyzed studies were exclusion and sexual aggression.

Synthesized Evidence

The overall ratings of the evidence for each measurement property of each instrument and their risk of bias ratings are reported in Table 3. No studies assessed or showed evidence of cross-cultural validity, test-retest reliability, criterion validity or responsiveness, so these properties are not discussed nor included in the table.

Content Validity

Content validity is considered to be the most important measurement property of an instrument; this refers to the relevance, comprehensiveness, and comprehensibility of the instrument, that is, the degree to which the content is an adequate reflection of the construct to be measured (Terwee et al., 2018). Just one of the 29 studies performed a content validity study besides the development study and was thus the only one to receive a "high" rating on this property. Thirteen instruments did not even have development studies, having only the reviewer rating, thus receiving a "very low" rating. The remaining studies obtained a "moderate" rating, as they had performed a development study for the instrument. Knowing that content validity is the most important measurement property and one which can affect all others, the number of studies with very low ratings in this property is surprisingly high.

Structural Validity

Structural validity is a relevant measure when the instrument is based on a reflective model, in which all items are a manifestation of the same underlying construct (Mokkink et al., 2018). Seventeen of the twenty-nine studies examined the structural validity of the analyzed instruments. Thirteen studies conducted a confirmatory factor analysis and so received a "very good" rating for their methodological quality, while four performed just an exploratory factor analysis, thus being considered "adequate". The remaining studies did not provide any information regarding this property.

Internal Consistency

Internal consistency measures the degree of the interrelatedness among the items, that is, the extent to which the items in a subscale are measuring the same concept. This property is relevant for questionnaires measuring a single construct by using multiple items (Terwee et al., 2007). Twenty-eight studies assessed the internal consistency of the instruments, of which five were considered "inadequate". These ratings were due to the internal consistency statistics being calculated for the entire scale, not each subscale separately. One was "doubtful" due to lack of evidence that the scale was

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Table 2. *Sample Characteristics, Dimensions, Digital Media, Perspective and Time Frame of the Selected Instruments*

Instrument/Source	Num. study	Sample characteristics (of the original validation study and other studies)	Dimensions (Items) (Cat.)	Scope of digital media	Perspective/Time frame
1. *Electronic Victimization (EV)* Bennett et al. (2011)	2	*n* = 403; 68% female Age = 18–22 years old USA	Hostility (7) (A,C) Intrusion (7) (B) Humiliation (5) (A,C) Exclusion (3) (D)	Text; E-mail; Social networking sites; Internet; Chat room; Mobile phone; Instant messaging; Photos	Victimization in the last year
2. *Cyber Dating Abuse Questionnaire (CDAQ-A)* Borrajo, Gámez-Guadix, & Calvete (2015b)	1	*n* = 433; 60% female; Age = 18–30 years old; Spain	Dimensions not identified (9) (A,B,C)	Social networking sites; Instant messaging; E-mail	Victimization not indicated
3. *Cyber Dating Abuse Questionnaire* (CDAQ-B) Study 1: Borrajo, Gámez-Guadix, Pereda et al. (2015) Study 2: Caridade & Braga (2019) Study 3: Hidalgo-Rasmussen et al. (2020) Study 4: Lara (2020)	23	*n* = 788; 77% female Age = 18–30 years old; Spain *n* = 272; 87.1% female; Age = 28.41 years old; Portugal *n* = 534; 51.6% female Age = 14.6 year; Mexico *n* = 1,538; 59.8% female	Direct aggression (11) (A,C) Control/monitoring (9) (B)	Social networking sites; New technologies; E-mail; Mobile phone; Camera; Video	Victimization perpetration in the last year
4. *Technology-facilitated Abuse in Relationships Scale (TAR)* Brown & Hegarty (2021)	2	Age = 14–24 years old; Chile *n* = 555; 52.8% female; Age = 16–24 Australia	Humiliation (10) (A,C) Monitoring & Control (7) (B) Sexual coercion (8) (E) Threats (5) (A)	Web; Images, Digital device, Video; Online profile; Digital conversation; Tracking software; Phone; Live video; Message; Calls	Victimization perpetrationv in the last 12 months
5. *Controlling Partner Inventory (CPI)* Burke et al. (2011)	2	*n* = 804; 67% female; Age = 18–23 years old; USA	Photos/camera/GPS/ Spyware (7) (B) Excessive communication (4) (B) Threatening behaviors (3) (A) Checking behaviors (4) (B)	E-mail; Mobile phone; Text; Social networking sites; Photos; Global Positioning System; Web cam	Victimization perpetration ever

Table 2. *Continued.*

Instrument/Source	Num. study	Sample characteristics (of the original validation study and other studies)	Dimensions (Items) (Cat.)	Scope of digital media	Perspective/Time frame
6. *Adolescent Relationship Abuse Questionnaire (CARPA)* Calvete et al. (2021)	3	*n* = 886; 51.7% female Age = 11–18 years old Spain	Online direct aggression (8) (A,C,E) Online control (3) (B)	Mobile; Internet; Social Networking Site; Messages; Photos; Videos; Mail; Calls	Victimization perpetration in the last year
7. *Cyber Dating Abuse Scale in adolescent dating (ECVPA)* Cava & Buelga (2018)	4	*n* = 363; 56.6% female Age = 12–18 years old Spain	Cyber aggression (10) (A,C) Cyber control (10) (B)	Mobile phone; Social networking sites; Internet; Whatsapp; Photos; videos and texts	Victimization perpetration in the last year
8. *Cyber Dating Abuse Questionnaire (CDAQ-C)* Celsi et al. (2021)	1	*n* = 134 heterosexual couples 50% female Age = 18 – 30 Italy	Items not identified (20) (A,B,C,E)	None mentioned	Victimization perpetration actual relationship
9. *Experience with Digital Dating Abuse (EDDA)* Hinduja & Patchin (2020)	1	*n* = 2218; 48.1% female Age = 12 – 17 years old USA	Dimensions not identified (6) (A,B,C)	Mobile phone; Tablet; Technological gadgets; Texts; Online; Photos	Victimization in the last year
10. *Intimate Partner Violence expressed through Digital Media Scale (EVIME)* Jaen-Cortés et al. (2017)	1	*n* = 878; 47% female Age = 12–19 years old Mexico	Control, intrusive monitoring and cyber surveillance (10) (B) Verbal agression (11) (A) Sexual agression (5) (E) Sexual coercion (3) (E) Humiliation (3) (A,C)	Photos; Email; Social networking sites; Texts; Electronic media; Videos; Mobile phone; GPS; Phone calls	Victimization ever
11. *Cyber Psychological Abuse Scale (CPAS)* Leisring & Giumetti (2014)	2	*n* = 271; 71% female Mean age = 19.03 years USA	Minor cyber abuse (6) (A,B,C,D) Severe cyber abuse (3) (A,B,C)	Technological mediums like: Mobile phone; Email; Computer; Social networking sites	Victimization perpetration in the current relationship
12. *Digital Intimate Partner Violence Questionnaire (DIPVQ)* López-Cepero et al. (2018)	1	*n* = 449; 76% female Mean age = 21.2 years Lima, Perú	Control centered cyberabuse (5) (B) Damage centered cyberabuse (7) (A,C,E)	Generic (Internet, Social networks, etc)	Victimization last month

Table 2. *Continued.*

Instrument/Source	Num. study	Sample characteristics (of the original validation study and other studies)	Dimensions (Items) (Cat.)	Scope of digital media	Perspective/Time frame
13. *Cyber Aggression Measure (CAM)* Marganski & Melander (2015)	2	*n* = 804; 67% female Age = 18–25 years old USA	Dimensions not identified (18) (A,B, C,E)	Socially interactive technologies	Victimization in the last year
14. *The Cyber Dating Violence Inventory (TCDVI)* Morelli et al. (2018)	4	*n* = 1405; 65.1% female Age = 13–22 years old USA	Psychological violence (6) (A,C) Relational violence (5) (A,C)	Sms; Email; Facebook	Victimization perpetration in the last year
15. *Intimate Partner Violence in Social Media in Adolescents Scale (E-Vpa)* Study 1: Muñiz Rivas & Monreal Gimeno (2017) Study 2: Muñiz Rivas (2017)	1	*n* = 919; 50.2% female Age = 15–18 years old Spain *n* = 919; 52,4% female Age = 15 – 18 years old Spain	Violence (4) (A) Control (6) (B) Emitted Control (6) (B) Emitted Violence (4) (A)	Not mentioned None mentioned	Perpetration not specified Perpetration in the last year
16. *Partner Electronic Aggression Questionnaire (PEAQ)* Preddy (2015)	1	Study 1: *n* = 692; 87% female Age = 22 years old; USA Study 2: *n* = 513; 63% female Age = 19 years old; USA	Public electronic aggression (4) (C) Private electronic aggression (4) (A,B)	Social networking sites; electronic communication	Victimization perpetration in the last 6 months
17. *Digital Dating Abuse Measure (DDAM-A)* Study 1: Reed et al. (2016)	5	*n* = 365; 57% female; Age = 17–22 years old; USA	Dimensions not identified (19) (A,B, C,E)	Computer; Internet; Mobile phone; Photo; Video	Victimization perpetration in the last year
Study 2: Reed et al. (2017)	5	*n* = 696; 56% female Age = 13–19 years old; USA	Direct Aggression (8) (A,C) Monitoring/Control (6) (B) Sexual Coercion (4) (E)	Mobile phone; Internet; Photo; Video; Message; Social networking site; Calls; Online accounts	Victimization perpetration current or most recent relationship

Table 2. *Continued.*

Instrument/Source	Num. study	Sample characteristics (of the original validation study and other studies)	Dimensions (Items) (Cat.)	Scope of digital media	Perspective/Time frame
18. *The Cyber dating Q_A Scale (CQ_AS)* Sánchez et al. (2015)	1	*n* = 626; 49.6% female Age = 14–17 years old Spain	Control (6) (B) Emotional communication strategies (7) (A,B) Jealousy (4) (B) Intrusive behaviors (2) (B) Cyber dating practices (4) (D) Intimacy (3) (NA)	Social networking sites in general; Photos; Texts; Phone calls; Chat; Mobile phone	Perpetration in the last 6 months
19. *Cyber Dating Abuse Questionnaire (CDAQ-C)* Smith et al. (2018): Adapted from cyberbullying scales (Stewart et al., 2014; Litwiller & Brausch, 2013)	1	*n* = 398; 56.4% female Canada Age = 14–18 years old	Dimensions not identified (16) (A,B, C,E) • Victimization (8) • Perpetration (8)	Online; Photos; Videos	Victimization perpetration in the last year
20. *Electronic Dating Aggression Survey (EDAS)* Smith-Darden et al. (2017) adapted from Finkelor et al. (2000)	1	*n* = 727;51% female Age = 11–15 years old USA	Dimensions identified, but items not specified (12) • Cyberstalking (B) • Harassment (C) • Coercive sexting (E)	Not mentioned	Perpetration in the last year
21. *Technology Assisted Adolescent Violence (TAAV)* Stonard (2018)	2	*n* = 469; 52% female Age: 12–18 years old England	Dimensions identified, but items not specified (12) (A,B,C,E)	Not mentioned	Victimization perpetration last 12 months
22. *Electronic Dating Aggression (EDA)* Thulin et al. (2020)	1	*n* = 470 62.5% female Age = 11 – 16 USA	Monitoring (2) (B) Harassment (6) (C) Sexual coercion (3) (E)	Text; Email; Social network Voicemail; Cell Phone; Calls; IM; Chat; Pictures; Videos	Victimization Perpetration not mentioned

Table 2. *Continued.*

Instrument/Source	Num. study	Sample characteristics (of the original validation study and other studies)	Dimensions (Items) (Cat.)	Scope of digital media	Perspective/Time frame
23. *Partner Directed Cyber Aggression Scale (PDCAS)* Wright (2015), adapted from Linder et al. (2002)	1	*n* = 600; 54% female Age = 17–18 years old USA	Relational aggression (3) (A) Privacy invasion (2) (B)	Online; Texts	Perpetration in the last year
24. *Cyber Dating Abuse Questionnaire (CDAQ-D)* Zweig et al. (2013) adapted from Picard (2007)	8	*n* = 5647; 52% female Age = 12–18 years old USA	Sexual abuse (4) (E) Non-sexual abuse (12) (E)	Photos; Texts; Email; Instant messaging services; Chat rooms; Social networking sites; Video; Mobile phone	Victimization perpetration in the last year

Note. Cat. = Categorization (A = Cyber psychological aggression; B = Cyber control; C = Public harassment; D = Exclusion; E = Cyber sexual aggression); NA = non-applied.

Table 3. *Summary of the Quality Assessment of the CDV Measurement Instruments based on the COSMIN Guide*

	Content Validity		Structural Validity		Internal Consistency		Construct Validity		Recommendation	
Instrument	MQ	Result (OR)	MQ	Result (OR)	MQ	Result (OR)	MQ	Result (OR)	TSR/QE	Cat.
1. EV	MOD	DS: +; RR: +			VG	α = .73–.77 (+)	VG	2/3 (+)	3/H	A
2. CDAQ-A	VL	RR: ?					IN	No Hyp. (?)	VL	C
3. CDAQ-B	MOD									
Study 1		DS: +; RR: +	VG	CFI = .99 (+)	VG	α = .73–.84 (+)	VG	2/2 (+)	5/H	**A**
Study 2		DS: +; RR: +	VG	NNFI = .96 (+)	VG	α = .84–.91 (+)			4/H	
Study 3		DS: +; RR: +	VG	CFI = .97 (+)	IN	α = .97 (+)			3/M	
Study 4		DS: +; RR: +	VG	CFI = .938 (?)	VG	α = .79–.89 (+)	VG	1/1 (+)	4/H	
4. TAR	HI	DS: +; CVS: +; RR: +	AD	KMO = .858–.946 (+)	VG	α = .80–.88 (+)	VG	2/3 (+)	6/H	**A**
5. CPI	VL	RR: ?			IN	α = .90 (+)			VL	C
6. CARPA	MOD	DS: +; RR: +	VG	CFI = 1 (+)	VG	α = .75–.97 (+)	VG	1/1 (+)	5/H	**A**
7. ECVPA	MOD	DS: +; RR: ?	VG	CFI = .99 (+)	VG	α = .92–.97 (+)	VG	No Hyp. (?)	3/H	B
8. CDAQ-C	VL	RR: +	VG	CFI = .99 (+)	VG	α = .91–.95 (+)	VG	3/3 (+)	4/M	A
9. EDDA	VL	RR: ?			DB	α = .85 (+)	VG	No Hyp. (?)	1/VL	C
10. EVIME	MOD	DS: +; RR: ?	AD	KMO = .936 (+)	VG	α = .78–.93 (+)			3/M	B
11. CPAS	MOD	DS: +; RR: ?	VG	CFI = .97 (+)	IN	α = .81–.82 (+)	VG	No Hyp. (?)	2/M	B
12. DIPVQ	MOD	DS: +; RR: +	AD	KMO = .93 (+)	VG	α = .96–.97 (+)			4/M	A
13. CAM	VL	RR: +			VG	α = .50–.92 (?)	VG	2/2 (+)	2/L	C
14. TCDVI	VL	RR: -	VG	CFI = .97 (+)	VG	α = .81–.82 (+)	VG	No Hyp. (?)	2/M	C
15. E-VPA										
Study 1	VL	RR: -			VG	α = .80–.86 (+)	VG	No Hyp. (?)	1/M	C
Study 2		RR: -	VG	CFI = .91 (?)	VG	α = .80–.86 (+)	VG	No Hyp. (?)	1/M	C
16. PEAQ	MOD	DS: +; RR: ?	AD	KMO = .94 (+)	VG	α = .93–.97 (+)			3/M	
17. DDAM-A	VL									
Study 1		RR: +			VG	α = .73–.77 (+)	VG	No Hyp. (?)	2/M	B
Study 2		RR: +			VG	α = .67–.83 (+)	VG	3/4 (+)	3/M	B
18. CQ_AS	MOD	DS: +; RR: ?	VG	CFI = .97 (+)	VG	α = .71–.85 (+)			3/H	B
19. CDAQ-D	VL	RR: +			IN	*H* = .86–.86 (+)	VG	No Hyp. (?)	2/L	C
20. EDAS	VL	RR: ?			VG	α = .47–.77 (?)	VG	1,5/2 (+)	1/L	C
21. TAAV	MOD	DS: +; RR: +			VG	α = .86–.99 (+)	VG	2/3 (+)	4/M	A
22. EDA	VL	RR: ?	VG	RMSEA = .017 (+)	IN	α = .80–.83 (+)	VG	No Hyp. (?)	2/L	C
23. PDCAS	VL	RR: -	VG	CFI = .94 (?)	VG	α = .82–.91 (+)	VG	3/3 (+)	2/L	C
24. CDAQ-E	VL	RR: -			VG	α = .81–.92 (+)	VG	3/4 (+)	2/L	C

Note. COSMIN Risk of Bias Checklist rating. MQ = Methodological quality (VG = Very Good; HI = High; AD = Adequate; MOD = Moderate; DB = Doubtful; IN = Inadequate; VL = Very Low); OR = overall rating; blank cells indicate no results. Result of measurement property = + = Sufficient; +/− = Inconsistent; − = Insufficient; ? = Indeterminate. DS = Development Study; RR = Reviewers Rating; CVS = Content Validity Study; No Hyp. = No Hypothesis; TSR = Total sufficient rating; QE: Quality of evidence; Cat. = Categories for recommendations on suitable instruments (**A** = best suitable; A = recommended; B = with caution; C = not recommended).

unidimensional, leading to uncertainty regarding whether internal consistency should apply (Mokkink et al., 2018). The remaining 22 studies that assessed internal consistency received a "very good" rating as it was calculated for each subscale and adhered to the other requisites for assessing this property.

Hypotheses Testing for Construct Validity

This property refers to the degree to which the results of an instrument are consistent with the hypotheses, assuming that it validly measures the construct to be measured (Mokkink et al., 2018). Many types of hypotheses can be tested but, in general, they concern comparisons with other outcome measurement instruments. In fact, every study that gave information about this property made comparisons with other outcome measures. However, ten of the studies that made these comparisons did not formulate specific hypotheses, leading to indeterminate results for this property.

Best Instruments for Assessing CDV

The current systematic review has detected the following three instruments as the most suitable for the assessment of CDV for adolescents and young people in the population of interest, based on their psychometric properties:

Cyber Dating Abuse Questionnaire (CDAQ-B; Borrajo, Gámez-Guadix, Pereda, et al., 2015). Four psychometric studies were identified (Borrajo, Gámez-Guadix, Pereda, et al., 2015; Caridade & Braga, 2019; Hidalgo-Rasmussen et al., 2020; Lara, 2020) reporting on the psychometric properties of the CDAQ-B (Borrajo, Gámez-Guadix, Pereda, et al., 2015) based on adolescents and young adults. This instrument was adapted to four cultural contexts (Spain, Portugal, Chile and Mexico). The adaption studies of this instrument (Caridade & Braga, 2019; Hidalgo-Rassmusen et al., 2020; Lara, 2020) were carried out appropriately by consulting with experts, focus groups or involving the target population. These studies modified some of the items due to wording and context, and two of them used the instrument with a sample of adolescents (13–24 years), despite the original (Borrajo, Gámez-Guadix, Pereda, et al., 2015) having been used in a sample of young adults (18–30 years). The three adaption studies showed positive and good-quality evidence in their psychometric properties, which means that this instrument is suitable for other contexts, with few changes. Moreover, this instrument has been more widely applied (23 studies) in comparison with other instruments (varying from 1 to 8 studies). The original study showed positive evidence in four indicators (content validity, structural validity, internal consistency, and construct validity). There was moderate-quality evidence supporting content validity. This instrument included 20 items related to three dimensions of CDV (Cyber psychological aggression, Cyber control, and Public harassment), but Cyber sexual and Exclusion were not included. This instrument could be highly recommended for assessing CDV in young people, but its application in adolescents under 14 years of age may be doubtful because the four psychometric studies did not cover the age range of adolescence, for which more validation studies are needed.

Technology-facilitated Abuse in Relationships Scale (TAR; Brown & Hegarty, 2021). A psychometric study of TAR (Brown & Hegarty, 2021) was carried out with 30 items in a population of 16–24 year-olds. High-quality evidence supporting content validity was found, and one content validity study was also rated as sufficient. The quality of the evidence for structural validity was adequate, with one study reporting a four-factor structure via Exploratory Factor Analysis. This instrument provided a clear definition of the dating relationship, the period of time under consideration is well delimited, and measures behaviors on all digital devices and digital platforms. The items are related to four dimensions of CDV (Cyber psychological aggression, Cyber control, Public harassment, and Cyber sexual). This instrument is very promising for assessing CDV abuse in old adolescents and young adults, although it should be noted that it was applied in Australia only. Thus, its application should not be recommended in other languages or countries.

Abuse in Teen Relationships (CARPA; Calvete et al., 2021). One psychometric study examined the measurement properties of the CARPA (Calvete et al., 2021) based on a sample of Spanish adolescents (11–18 years). Moderate-quality evidence supporting content validity was found. The quality of the evidence of structural validity was very good, with a two-factor structure applying Confirmatory Factor Analysis. This instrument is a subscale inside a more complete instrument assessing all kinds of abuse in dating relationships, so it is more reduced than the other two instruments. It included 11 items related to four dimensions of CDV (Cyber psychological aggression, Cyber control, Public harassment, and Cyber sexual). This instrument showed good measurement properties and it is promising, but it has only been applied in Spanish samples, so adaption studies should be done to prove its suitability for other contexts.

Discussion

CDV is a relatively new line of research, and there is no consensus regarding its conceptualization, a situation which has led to the development of multiple and different tools to measure it. The assessment of CDV shows

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a great methodological diversity (Rodríguez-Domínguez et al., 2020), and the objective of this study was to realize a systematic review of the CDV literature, describe the measurement tools that have been developed in recent years and, finally, identify the best instruments based on their methodological quality. It is hoped this paper will help scholars in choosing an appropriate instrument for their research.

In this systematic review, up to 24 different measurement tools were found, along with 29 psychometric studies about these instruments, all presenting differences in methodological characteristics such as sampling context, psychometric properties provided, and dimensions studied. This variability in the measurement tools is not new as it had already been seen in previous reviews (Brown & Hegarty, 2018; Caridade et al., 2019; Cavalcanti & Coutinho 2019; Rodríguez-Domínguez et al., 2020). However, this paper includes some new instruments developed in recent years, and provides a deep evaluation of the psychometric properties of the measurement tools and its methodological quality following the COSMIN guidelines (Table 3) in order to formulate recommendations regarding their use. Despite the numerous instruments and psychometric studies found by this review, many development and content validity studies did not report a systematic process of how items were produced or selected, did not involve target population or experts, or did not provide sufficient detail (such as items, recall period, and response options).

After the evaluation of ten indicators of methodological quality as well as the eight indicators assessing the reported psychometric properties quality, seven selected instruments were classified as category A (Prinsen et al., 2018), and three instruments were determined as the most suitable for the measurement of CDV: Cyber Dating Abuse Questionnaire (Borrajo, Gámez-Guadix, Pereda, et al., 2015), Technology-facilitated Abuse in Relationships Scale (Brown & Hegarty, 2021), and Abuse in Teen Relationships (CARPA) (Calvete et al., 2021). The Cyber Dating Abuse Questionnaire could be considered as the best instrument because it shows good-quality evidence in its psychometric properties, with consistent evidence of four psychometric studies based on adolescents and young adults and adapted to four cultural contexts (Spain, Portugal, Chile and Mexico). Thus, this instrument is recommended for assessing CDV in adolescents older than 14 and young adults. The Technology-facilitated Abuse in Relationships Scale stands out for having high-quality evidence supporting content validity. Moreover, it measures CDV behaviors on all digital devices and includes four dimensions. However, it was only applied to an Australian context. The Abuse in Teen Relationships scale has a cyber subscale with eleven items and can be applied to adolescents of all ages, but adaption studies should be done to prove its suitability for non-Spanish contexts. Nevertheless, no selected instrument assessed or provided psychometric evidence to support cross-cultural validity, reliability, criterion validity, or responsiveness.

The search in the present study was limited by focusing only on scientific articles, by excluding measures that investigate only one CDV behavior and those studies focused on subjects older than 30 years, which may have resulted in relevant contributions to the review being overlooked. COSMIN is a rigorous methodological tool, but there is a certain level of subjectivity in rating each paper (Cassidy et al., 2018). Thus, the process of evaluation of psychometric properties of 24 instruments is transparent, and the global rating of instruments was elaborated by consensus between two evaluators considering the information in Table 3.

Digital media such as cell phones and social networks have had a favorable impact on romantic relationships, since couples can keep in touch when they are not face to face, allowing the perception of greater closeness (Javier-Juárez et al., 2021). However, digital media can also have a negative impact in dating relationships because they provide new channels to exercise harassment, control and abuse (and therefore to suffer them), in childhood, adolescence and young adulthood (van Ouytsel et al., 2019). There is no agreement regarding the conceptualization of CDV. This paper defends the use of the term *cyber dating violence*, and the definition includes different types of dating aggression using digital media (psychological direct, control, public harassment, exclusion, and sexual). Exclusion (excluding, or blocking on social networks) is the least assessed dimension among the instruments analyzed. Although previous reviews (Brown & Hegarty, 2018; Caridade et al., 2019; Cavalcanti & Coutinho, 2019; Rodríguez-Domínguez et al., 2020) have already shown the variability of the used instruments and their methodological approaches, the present review analyzed the quality of psychometric properties using the COSMIN checklist. Thus, this systematic review can help researchers to assess CDV and clinicians to focus on the evaluation programs. Among the three tools recommended, the Cyber Dating Abuse Questionnaire (14−30 years) obtained the highest total sufficient rating.

Some studies argue that, although online and offline violence present some similarities in terms of habits and attitudes, violence through virtual contexts shows certain particular characteristics that should be addressed in a specific way (Núñez et al., 2021). Thus, it is important to understand the negative use of technology in intimate relationships, as well as the differences and similarities between online and offline violence, in order to be able to support adolescents and young people

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during this important stage of their lives, and to advance in the creation of effective and specific prevention and treatment programs. Early detection of CDV could be very relevant; therefore, it is essential to provide a reliable and valid evaluation instrument. Although the communication is virtual, the relationships, their effects and consequences are real. What happens online is not something merely virtual since it has real effects on people and can cause more depressive moods (Cava, Buelga et al., 2020) and a significant deterioration of life quality. Future studies could focus on analyzing reliability, criterion and cross-cultural validity of the existing instruments.

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Appendices

Appendix A: Studies which Have Applied some CDV Instruments but are not Psychometric Studies

Instrument/Source	Studies where the instrument is used
1. *Electronic Victimization (EV)* Bennett et al. (2011)	Bennett et al. (2011); Ramos et al. (2021)
2. *Cyber Dating Abuse Questionnaire (CDAQ-A)* Borrajo, Gámez-Guadix, & Calvete (2015a)	Borrajo, Gámez-Guadix, & Calvete (2015a)
3. *Cyber Dating Abuse Questionnaire (CDAQ-B)* Borrajo, Gámez-Guadix, & Calvete (2015b)	Borrajo, Gámez-Guadix, & Calvete (2015b); Borrajo, Gámez-Guadix, Pereda et al. (2015); Borrajo & Gámez-Guadix (2016); Caridade & Braga (2019); Caridade et al. (2020); Deans & Bhogal (2019); Fernández-González et al. (2020); Gracia-Leiva et al. (2020); Hidalgo-Rasmussen et al. (2020); Javier-Juárez et al. (2021); Lara (2020); Machimbarrena et al. (2018); Peña Cárdenas et al. (2018); Rojas-Solís et al. (2021); Romo-Tobón et al. (2020); van Ouytsel, Ponnet & Walrave (2016); van Ouytsel, Ponnet, Walrave & Temple (2016); van Ouytsel, et al. (2017); Víllora et al. (2019a); Víllora et al. (2019b); Víllora et al. (2019c); Víllora et al. (2019d); Víllora et al. (2021)
4. *Technology-facilitated Abuse in Relationships Scale (TAR)* Brown & Hegarty (2021)	Brown & Hegarty (2021); Brown et al. (2021)
5. *Controlling Partner Inventory (CPI)* Burke et al. (2011)	Brem, Romero et al. (2019); Burke et al. (2011)
6. *Adolescent Relationship Abuse Questionnaire (CARPA)* Calvete et al. (2021)	Calvete et al. (2021); Ortega-Barón et al. (2020); Ortega-Barón et al. (2021)
7. *Cyber Dating Abuse Scale in Adolescent Dating (ECVPA)* Cava & Buelga (2018)	Cava & Buelga (2018); Cava, Buelga et al. (2020); Cava, Martínez-Ferrer et al. (2020); Cava, Tomás et al. (2020)
8. *Cyber Dating Abuse Questionnaire (CDAQ-C)* Celsi et al. (2021)	Celsi et al. (2021)
9. *Experience with Digital Dating Abuse (EDDA)* Hinduja & Patchin (2020)	Hinduja & Patchin (2020)
10. *Intimate Partner Violence expressed through Digital Media Scale (EVIME)* Jaen-Cortés et al. (2017)	Jaen-Cortés et al. (2017)
11. *Cyber Psychological Abuse Scale (CPAS)* Leisring & Giumetti (2014)	Brem, Stuart et al. (2019); Leisring & Giumetti (2014)
12. *Digital Intimate Partner Violence Questionnaire (DIPVQ)* López-Cepero et al. (2018)	López-Cepero et al. (2018)
13. *Cyber Aggression Measure (CAM)* Marganski & Melander (2015)	Marganski & Melander (2015) Melander & Marganski (2020)
14. *The Cyber Dating Violence Inventory (TCDVI)* Morelli et al. (2018)	Araci-İyiaydin et al. (2020); Morelli et al. (2018); Toplu-Demirtaş, Akcabozan-Kayabol et al. (2020); Toplu-Demirtaş, May et al. (2020)
15. *Intimate Partner Violence in Social Media in Adolescents Scale (E-Vpa)* Muñiz Rivas & Monreal Gimeno (2017)	Muñiz Rivas & Monreal Gimeno (2017)
Teen Dating Violence in Social Networks Scale (TDVSNS) Muñiz Rivas (2017)	Muñiz Rivas (2017)
16. *Partner Electronic Aggression Questionnaire (PEAQ)* Preddy (2015)	Preddy (2015)
17. *Digital Dating Abuse Measure (DDAM-A)* Reed et al. (2016)	Bhogal & Howman (2019); Bhogal et al. (2019); Bhogal et al. (2021); Reed et al. (2016); Reed et al. (2018)
Digital Dating Abuse Measure (DDAM-B) Reed et al. (2017): Adapted from Reed et al. (2016)	Ellyson et al. (2021); Reed et al. (2017); Reed, Conn et al. (2020); Reed, Cosgrove et al. (2020); Reed et al. (2021)
18. *The Cyber dating Q_A Scale (CQ_AS)* Sánchez et al. (2015)	Sánchez et al. (2015)

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Continued.

Instrument/Source	Studies where the instrument is used
19. *Cyber Dating Abuse Questionnaire (CDAQ-C)* Smith et al. (2018): Adapted from cyberbullying scales (Litwiller & Brausch, 2013; Stewart et al., 2014)	Smith et al. (2018)
20. *Electronic Dating Aggression Survey (EDAS)* Smith-Darden et al. (2017) adapted from Finkelor et al. (2000)	Smith-Darden et al. (2017)
21. *Technology Assisted Adolescent Violence (TAAV)* Stonard (2018)	Stonard (2018); Stonard (2020)
22. *Electronic Dating Aggression (EDA)* Thulin et al. (2020)	Thulin et al. (2020)
23. *Partner Directed Cyber Aggression Scale (PDCAS)* Wright (2015), adapted by Linder et al. (2002)	Wright (2015)
24. *Cyber Dating Abuse Questionnaire (CDAQ-D)* Zweig et al. (2013) adapted from Picard (2007)	Dank et al. (2013); Dyar et al. (2020); Lu et al. (2018); Lu et al. (2020); Muñoz-Fernández & Sánchez-Jiménez (2020); Temple et al. (2016); van Ouytsel, Torres, et al. (2016); Zweig et al. (2013)

Appendix B

Property	Definition	When it is considered positive
Content Validity	Extent to which a measure represents all facets of a given construct, when it is an adequate reflection of the construct.	When a clear description is provided of the measurement aim, the target population, the concepts that are being measured, and the item selection AND target population and investigators are involved in item selection
Structural Validity	The degree to which the scores of an instrument are an adequate reflection of the dimensionality of the construct to be measured.	When data of exploratory and/or confirmatory factorial analysis: RMSEA < .08–.05; CFI, NNFI > .90–.95
Cross-cultural Validity	The degree to which the performance of the items on a translated or culturally adapted instrument are an adequate reflection of the performance of the items of the original version of the instrument.	When there are no important differences between group factors in trans-cultural studies.
Hypotheses testing	The degree to which the scores of an instrument are consistent with hypotheses.	When the result is in accordance with the hypotheses (specific hypotheses are formulated AND at least 75% of the results are in accordance with these hypotheses).
Reliability	The extent to which patients can be distinguished from each other, despite measurement errors (relative measurement error).	When: ICC or Kappa > .70
Internal Consistency	The extent to which items in a (sub)scale are intercorrelated, thus measuring the same construct.	When factor analyses are performed on adequate sample size AND Cronbach's alpha(s) are calculated per dimension AND Cronbach's alpha(s) are between .70 and .95.
Criterion Validity	The extent to which scores on a particular questionnaire relate to a gold standard.	Correlation with gold standard ≥ .70 OR AUC ≥ .70.
Responsiveness	The ability of a questionnaire to detect clinically important changes over time.	The result is in accordance with the hypothesis OR AUC ≥ .70.

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