

Validation of the Cyber Aggression in Relationships Scale Korean Version (CARS-K)*

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This study validated the Cyber Aggression in Relationships Scale (CARS), developed for measuring cyber intimate partner violence (IPV) experiences, in a Korean context. Data were collected from 300 unmarried Korean adults, aged 19 to 39, who had been in intimate relationships for at least six months. An item analysis was conducted on all 34 items. This 34-item scale was included in reliability testing, item factor analysis (IFA), and convergent validity assessments. The results of IFA and scaled chi-square difference tests indicated the three-factor models showed better fit indices for both perpetration and victimization. Furthermore, the CARS-K showed appropriate internal consistency as well as convergent validity. These findings confirm that the CARS-K is a reliable and valid instrument for assessing cyber IPV.

Key words : IPV, cyber IPV, intimate relationships, validation, item factor analysis

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Intimate partner violence (IPV) is defined as behaviors that cause physical, psychological, or sexual harm within intimate relationships (Thompson et al., 2006). This relational violence often occurs through technology. This type of IPV is called cyber intimate partner violence (cyber IPV; Watkins, Maldonado, & DiLillo, 2018). Cyber IPV has emerged as a prevalent and major mental health concern among adolescents and emerging adults. For instance, Zweig, Dank, Yahner, and Lachman (2013) reported that over a quarter of youth experienced some form of cyber dating aggression in a current or recent dating relationship. Similarly, more than 50% of college students reported cyber dating abuse in the past six months (Borrajó, Gámez-Guadix, & Calvete, 2015). Similar to in-person IPV, victims of cyber IPV also experience adverse psychological effects such as depression, fear, anger, anxiety, and posttraumatic stress disorder (PTSD) symptoms (Zweig, Lachman, Yahner, & Dank, 2014; Drouin, Ross, & Tobin, 2015; Duerksen & Woodin, 2021; Bentley & Riutort-Mayol, 2023). Given its prevalence and psychological impact, studies are needed to examine the characteristics, risk and protective factors of cyber IPV. To conduct this research, reliable and valid instruments for measuring individuals' cyber IPV experiences are needed.

In-person IPV is commonly assessed using the Revised Conflict Tactics Scale (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman,

1996), which measures both perpetration and victimization. However, the CTS-2 has limitations in assessing cyber IPV, because cyber IPV possesses distinct characteristics that differentiate it from in-person IPV (Watkins et al., 2018). For example, since digital communication does not happen in-person, cyber IPV lacks physical and social cues presented in face-to-face interactions (Denegri-Knott & Taylor, 2005; Dehue, Bolman, & Völlink, 2008). Additionally, many technology-based messages are relatively permanent, allowing individuals to repeatedly view aggressive messages or forward private messages to a larger audience (Slonje & Smith, 2008; Runions, Shapka, Dooley, & Modecki, 2013). Given these differences, there is a need for instruments specifically designed to measure cyber IPV.

In Korea, several studies have attempted to validate such measures. Ryu (2020) translated and validated the Cyber Dating Violence Inventory (CDVI; Morelli, Bianchi, Chirumbolo, & Baiocco, 2018), and Chae (2022) translated and validated the Cyber Dating Abuse Questionnaire (CDAQ; Borrajó, Gámez-Guadix, Pereda, & Calvete, 2015) into the Korean version. While these studies meaningfully contribute to understanding cyber IPV distinct from in-person IPV, both studies focused only on victimization. Although measuring cyber IPV victimization is necessary, assessing cyber IPV perpetration is equally important for related studies, prevention, and intervention. In addition,

similar to in-person IPV, cyber IPV is often bidirectional, in which individuals experience both perpetration and victimization of IPV (Renner & Whitney, 2012; Watkins et al., 2018). Therefore, measuring only one aspect of cyber IPV may provide an incomplete understanding of individuals' cyber IPV experiences. For these reasons, this study aimed to validate an instrument that measures both perpetration and victimization of cyber IPV.

Watkins et al. (2018) developed the Cyber Aggression in Relationships Scale (CARS), a self-report scale that measures both perpetration and victimization of cyber partner aggression (cyber IPA) within the past six months. Based on theoretical and empirical literature, Watkins et al. (2018) proposed and tested a specific model of cyber IPV, consisting of three-factor structures (psychological cyber aggression, sexual cyber aggression, and stalking cyber aggression) for both perpetration and victimization. Additionally, in Watkins et al. (2018), the cyber IPA measured by the CARS showed significant associations with in-person IPV, trait anger, jealousy, alcohol use, mental health problems, and relationship satisfaction.

By similarly formatting its items, the cyber IPA measured by the CARS is comparable to in-person IPV measured by the CTS-2 (Watkins et al., 2018). While cyber IPV and in-person IPV are distinct phenomena, these two forms of relational violence are also interrelated (Schnurr, Mahatmya, & Basche, 2013; Leisring &

Giumetti, 2014; Marganski & Melander, 2015; Taccini & Mannarini, 2024). Considering this relationship, providing a cyber IPV measurement that is comparable to in-person IPV measurement seems useful.

The CARS (Watkins et al., 2018) has been used in studies examining mental health problems who experienced victimization of cyber IPV, as well as research comparing effects of cyber IPV and in-person IPV (e.g., Bentley & Riutort-Mayol, 2023; Dekel, Nuttman-Shwartz, & Gilbar, 2025). Considering these studies, validating the CARS under Korean conditions may facilitate future research exploring mental health outcomes among individuals experiencing cyber IPV and research comparing effects of cyber and in-person IPV or the interaction between two types of relational violence. Furthermore, because the present study aimed to validate all items of the CARS which measures both perpetration and victimization of cyber IPV, it may also contribute to understanding the bidirectionality of cyber IPV, in which both perpetration and victimization of cyber IPV coexist within the same individuals.

The present study aimed to translate and validate the CARS developed by Watkins et al. (2018) in the Korean context. By doing so, this study aimed to provide a reliable and valid instrument for quantitatively measuring both perpetration and victimization of cyber IPV. Specifically, the present study translated the CARS into Korean, tested its factor structure

and evaluated reliability, convergent validity of the translated CARS.

For convergent validity, in-person IPV, which is interrelated with cyber IPV, was measured (Schnurr et al., 2013; Leisring & Giumetti, 2014; Marganski & Melander, 2015). Additionally, several constructs that are related to in-person IPV and expected to be related to cyber IPV were also measured. First, trait anger was measured because individuals who perpetrate IPV showed higher trait anger (Eckhardt, Jamison, & Watts, 2002; Yang, 2009; Maldonado, Watkins, & DiLillo, 2014). Second, since individuals who experienced victimization of cyber IPV suffer from negative psychological experiences such as depression and anxiety (Zweig et al., 2014; Drouin et al., 2015; Duerksen & Woodin, 2021), participants' psychological symptoms were measured. Third, relational aggression was measured since some types of relational aggression such as proactive relational aggression and affective relational aggression influence perpetration of IPV (Kim & Park, 2021). Fourth, since the associations between heavy alcohol use and premarital aggression or IPV were reported (Leonard & Senchak, 1993; Foran & O'Leary, 2008; Yang, 2009), participants' problematic alcohol use was also measured. For problematic alcohol use, considering online victimization is related to substance use (Mitchell, Ybarra, & Finkelhor, 2007), this construct was expected to be related to both perpetration and victimization of cyber IPV in

this study. Fifth, the relationship satisfaction was also measured, since this construct has been negatively correlated with in-person IPV in a prior study (Stith, Green, Smith, & Ward, 2008). In Watkins et al. (2018), relationship satisfaction was negatively associated with several types of perpetration and victimization of cyber IPV. Therefore, this construct was also expected to be related to both perpetration and victimization of cyber IPV.

Method

Participants

Participants were unmarried adults aged 19 to 39 who reported having been in intimate relationships for at least six months. This age group corresponds to emerging adulthood. During this developmental period, individuals form various interpersonal relationships, including intimate relationships, and difficulties in establishing intimate relationships may lead to psychological stress and social maladjustment in individuals at this stage (Jackson & Finney, 2002). When such difficulties are not managed adaptively, they may engage in maladaptive behaviors such as aggression or violence (Suh, 2009). Considering these developmental characteristics, cyber IPV may be more prevalent in emerging adulthood (Zweig et al., 2013; Borrajo, Gámez-Guadix, & Calvete, 2015).

Therefore, the present study collected data from individuals in emerging adulthood.

Participants were primarily recruited online through Internet bulletin boards of several Korean universities, regional community boards, and social networking services, utilizing Google Forms for about 11 months from March 2024 to January 2025. Additionally, some participants were recruited in-person using printed questionnaires from March to May 2024. Prior to participation, all participants were informed about the study's purpose, procedures, and their rights as participants. Given the potential for some items in the translated version of the CARS and the CTS-2 to elicit discomfort, depending on individual differences among participants, participants were informed that they could discontinue the survey at any time without disadvantage. It was also clarified that any previously provided personal information and responses would be discarded upon withdrawal. Additionally, participants were instructed that, if needed, they could contact the researcher to receive immediate support, including brief crisis intervention or referral to a licensed clinical psychologist for short-term professional assistance. As compensation, 300 participants were randomly selected to receive a coffee gift voucher (approximately 3,000 Korean won).

Although no consistent standard describes the precise sample size for factor analysis, recommendations generally suggest at least 300 participants or 10 participants per item

(Nunnally, 1978; Tabachnick & Fidell, 2013).

To account for potential dropouts, this study initially aimed to collect data from approximately 350 participants and a total of 341 responses were collected. Of these 341 participants, one participant declined to consent, 17 did not respond to some items, and 20 were excluded for not meeting the inclusion criteria of this study. Furthermore, three participants submitted duplicate responses. In these cases, only the first response was retained, and the second response was excluded from analysis. Finally, data from 300 participants were included in the final analysis. Participants' ages ranged from 19 to 39 years ($M = 25.12$, $SD = 4.23$), and 193 were female (64.33%), 104 were male (34.67%), and 3 (1.00%) identified as another gender. This study was approved by the institutional review board of Chung-Ang University (No. 1041078-20231230-HR-339).

Procedures

After obtaining permission from the original authors, 34 items of the CARS and 78 items of the CTS-2 were translated into the Korean version by a graduate student majoring in clinical psychology, and independently back-translated by another bilingual graduate student majoring in clinical psychology (Brislin, 1970). Some translated items were modified to reflect the Korean cultural context. For example, the 7th item of the CTS-2 was revised to better

align with legal and cultural norms in Korea. Additionally, the term ‘partner’ was replaced with ‘romantic partner’ across all items of the original CARS and the CTS-2 to ensure contextual relevance in Korean usage of these terms.

In the original scales, each perpetration item was directly followed by its corresponding victimization item. To enhance readability, the item order for both scales was rearranged so that all perpetration items were presented first, followed by all victimization items. For the CTS-2, some items describing victimization experiences (“My partner did this to me.”) were reworded to specify the referenced behaviors after being separated from their corresponding perpetration item. All translated and revised items of the CARS and the CTS-2 were reviewed and finalized through confirmation with the professor, who participated in this study as an author, majored in clinical psychology, and has conducted multiple studies in clinical psychology and forensic psychology, as well as with a licensed clinical psychologist. Additionally, there was review regarding the naming of factors. In Watkins et al. (2018), one factor was labeled stalking cyber aggression, however, this factor name was considered less appropriate given the legal definition and conceptual understanding of stalking in Korea. Therefore, this factor was renamed cyber behavioral control to better reflect the cultural and legal context of Korea. The translated items and factor names of

the CARS used in this study are presented in Appendix.

Measures

Cyber Aggression in Relationships Scale

Korean Version (CARS-K)

The Cyber Aggression in Relationships Scale (CARS), developed by Watkins et al. (2018), is a self-report scale designed to assess both perpetration and victimization of cyber intimate partner aggression (cyber IPA) or cyber IPV. The original scale consists of 34 items, with 17 items each for perpetration and victimization of cyber IPV. According to Watkins et al. (2018), the CARS comprises three factors for both perpetration and victimization: psychological cyber aggression (5 items each), sexual cyber aggression (4 items each), and stalking cyber aggression (8 items each). Participants rated the frequency of each behavior that occurred during the past six months on a scale ranging from 0 (“This has never happened”) to 6 (“More than 20 times in the past 6 months”). If the behavior did not occur within the past six months but had occurred previously, participants responded to 7 (“Not in the past 6 months, but it did happen before”). In Cano-Gonzalez, Charak, Chen, & Cantos (2022), internal consistencies (Cronbach’s α) were .68 for psychological cyber aggression perpetration and .71 for psychological cyber aggression victimization. For sexual cyber aggression,

Cronbach's α values were .83 for perpetration and .75 for victimization, and for stalking cyber aggression, Cronbach's α values were .82 for perpetration and .83 for victimization (Cano-Gonzalez et al., 2022).

Revised Conflict Tactics Scale (CTS-2)

The Revised Conflict Tactics Scale (CTS-2; Straus et al., 1996) was used to measure participants' in-person IPV experiences and to test convergent validity of the CARS-K. The CTS-2 is the revised version of the Conflict Tactics Scale (CTS) developed by Straus (1979, 1990). In the present study, the CTS-2 translated in this study was used. While the original scale assesses in-person IPV behaviors during the past year, this time frame of the CTS-2 was modified to cover the past six months to align with the CARS-K (Watkins et al., 2018). Structurally similar to the CARS, the CTS-2 measures both participants' experiences and their partners' experiences with 39 items each, totaling 78 items. This 78-item scale includes five subscales: negotiation, psychological aggression, physical assault, sexual coercion, and injury. For the purpose of this study, subscales measuring psychological aggression (8 items each), physical assault (12 items each), and sexual coercion (7 items each) were used, resulting in a total of 54 items. Participants' in-person IPV behaviors during the past six months were rated on a scale ranging from 0 ("This has never happened") to 6 ("More than

20 times each in the past 6 months"). Similar to the CARS, if a behavior did not occur within the past six months but had occurred previously, participants responded to 7 ("Not in the past 6 months, but it did happen before"). In the present study, KR-20 values were .92 for psychological aggression perpetration, and .94 for psychological aggression victimization. For physical assault, KR-20 values were .98 for perpetration and victimization, and for sexual coercion, KR-20 values were .97 for perpetration and .96 for victimization. KR-20 value of total perpetration and victimization was .99.

State-Trait Anger Expression Inventory Korean Version (STAXI-K)

The State-Trait Anger Expression Inventory (STAXI) is a scale developed by Spielberger (1988) and the State-Trait Anger Expression Inventory Korean version (STAXI-K) is the Korean validated version of STAXI by Chon, Hahn, Lee, & Spielberger (1997). The STAXI-K comprises 44 items and has three subscales: trait anger (10 items), state anger (10 items), and anger expression (24 items). The anger expression subscale is further divided into three factors, each measured by 8 items. These factors are anger suppression, externally directed anger, and anger control. In the present study, only the trait anger subscale of STAXI-K was used to measure participants' trait anger and to evaluate convergent validity of the CARS-K. Participants responded to items on a 4-point

Likert scale ranging from 1 (“Almost never”) to 4 (“Always”). In the present study, Cronbach’s α for the trait anger subscale of the STAXI-K was .81.

Brief Symptom Inventory-18 (BSI-18)

The Brief Symptom Inventory-18 (BSI-18) was developed by Derogatis (2001) and was validated in a Korean version by Park, Woo, & Chang (2012). In this study, the Korean version of the BSI-18 was used to assess participants’ psychological symptoms including somatization, depression, and anxiety, and to test convergent validity of the CARS-K. This 18-item questionnaire measures three psychological symptoms, with 6 items each. These psychological symptoms are somatization, depression, and anxiety. Participants rated their symptoms on a 5-point Likert scale, ranging from 0 (“Not at all”) to 4 (“Extremely”). In the present study, Cronbach’s α values were .86 for somatization, .85 for depression, and .82 for anxiety, and .93 for total.

Korean Version of Relational Aggression Scale

The Korean version of the Relational Aggression Scale (Bae & Choi, 2018) is a 10-item scale measuring relational aggression. This scale is an adapted and validated version of the 16-item relational aggression subscale from the Self-Report of Aggression and Social Behavior Measure (SRASBM) developed by

Morales & Crick (1998). The Korean version of the Relational Aggression Scale measures three types of relational aggression: reactive relational aggression (4 items), proactive relational aggression (3 items), and affective relational aggression (3 items). This scale was also used to evaluate convergent validity of the CARS-K. Participants responded on a 5-point Likert scale ranging from 1 (“Not at all”) to 5 (“Extremely”), where higher scores indicate greater relational aggression. Cronbach’s α values were .78 for reactive relational aggression, .74 for proactive relational aggression, .57 for affective relational aggression, and .87 for total scale.

Alcohol Use Disorders Identification

Test-Korea (AUDIT-K)

To measure participants’ problematic alcohol use and to assess convergent validity of the CARS-K, the Alcohol Use Disorders Identification Test-Korea (AUDIT-K; Lee, Lee, Lee, Choi, & Nam, 2000) was used. This 10-item instrument is a validated version of the Alcohol Use Disorders Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1989) by Lee et al. (2000). The AUDIT-K comprises three subscales: hazardous drinking (3 items), dependent drinking (3 items), and harmful drinking (4 items). Items 1 through 8 were rated on a scale from 0 to 4, and items 9 to 10 were rated on a scale of 0, 2, or 4. In the present study, Cronbach’s α values were .79 for hazardous drinking and dependent drinking, .78

for harmful drinking, and .87 for total.

Korean Marital Satisfaction Inventory (K-MSI)

Participants' relationship satisfaction was measured by using the Korean Marital Satisfaction Inventory (K-MSI). Originally, the K-MSI is a revised version of the Marital Satisfaction Inventory (MSI; Snyder, 1979) by Kwon and Choi (1999). In this study, a specific version of the K-MSI was used. Specifically, Yu (2000) conducted a factor analysis on the K-MSI revised by Kwon and Choi (1999) to measure unmarried adults' intimate relationship satisfaction and Lee (2000) removed one item from this scale after conducting a factor analysis because it showed a lower inter-item correlation. This revised version of the K-MSI consists of 41 items. Participants responded on a 5-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). A Cronbach's α value for the K-MSI was .95 in this study.

Data Analysis

All statistical analyses were performed using SPSS Statistics 25.0 and R 4.5.1 for Windows. Both the CARS-K and the CTS-2 were not unidirectional, as responses ranging from 0 to 6 measured IPV experiences within the past six months, while a response of 7 indicated behaviors that occurred prior to that period. Therefore, responses to the CARS-K and the

CTS-2 were coded dichotomously (0 = did not occur; 1 = occurred). These scoring procedures were similar to those commonly used for the CTS-2 (Watkins et al., 2018). For CARS, Watkins et al. (2018) and Bentley and Riutort-Mayol (2023) used these procedures.

For the item analysis of the CARS-K, squared multiple correlations (SMC) were calculated for all items. Subsequently, item factor analyses (IFA) were conducted independently for perpetration and victimization of cyber IPV using weighted least squares means and variance adjusted (WLSMV) estimation. According to Watkins et al. (2018), cyber IPV is a multifactor structure consisting of psychological, sexual, and stalking (behavioral control in this study) cyber aggression. Therefore, this study tested whether these three-factor models of cyber IPV (cyber psychological aggression, sexual cyber aggression, and cyber behavioral control) could be replicated in the Korean sample. For this purpose, three-factor models of cyber IPV were compared to single-factor models of cyber IPV as competing models (Watkins et al., 2018). To test convergent validity of the CARS-K, Pearson correlation coefficients were computed between the CARS-K, the CTS-2, the trait anger subscale of the STAXI-K, the BSI-18, the Relational Aggression Scale, the AUDIT-K, and the K-MSI. In correlation analyses, mean scores for each scale were calculated by dividing the total score by the number of items including the CARS-K and the CTS-2. For reliability analyses,

Cronbach's α coefficient was calculated for the trait anger subscale of the STAXI-K, the BSI-18, the Relational Aggression Scale, the AUDIT-K, and the K-MSI. For the CARS-K and the CTS-2, Kuder-Richardson formula 20 (KR-20) values were computed. Additionally, for the CARS-K, McDonald's ω reliability coefficient was calculated in analyzing the reliability of the CARS-K.

Results

Participants' IPV Experiences

Among 300 participants, the majority of participants identified their sexual orientation as heterosexual ($n = 264$, 88.00%), 6 participants identified their sexual orientation as homosexual (2.00%), 22 as bisexual (7.33%), and 8 as other (2.67%). More than half of participants reported experiences of cyber IPV perpetration ($n = 222$, 74.00%), and victimization ($n = 178$, 59.33%). Similarly, in-person IPV was also commonly reported. Specifically, 209 participants (69.67%) reported perpetration of in-person IPV and 185 participants (61.67%) reported victimization of in-person IPV. Additionally, 166 participants (55.33%) reported having experienced both perpetration and victimization of cyber IPV, and 168 (56.00%) reported having experienced both perpetration and victimization of in-person IPV.

Gender differences in IPV findings have been

mixed and inconsistent (e.g., Straus, 2004; Chan, 2011). Therefore, gender differences in cyber IPV and in-person IPV were analyzed for exploratory purposes. A chi-square test showed significant gender differences in cyber IPV experiences (Perpetration: $\chi^2(1) = 7.18$, $p < .01$, $\phi = -.16$; Victimization: $\chi^2(1) = 16.43$, $p < .001$, $\phi = -.24$). Specifically, female participants experienced more perpetration (Male: $n = 87$, 29.29%; Female: $n = 134$, 45.12%) and victimization (Male: $n = 78$, 26.27%; Female: $n = 98$, 33.00%). There were also significant gender differences in in-person IPV experiences (Perpetration: $\chi^2(1) = 14.15$, $p < .001$, $\phi = -.22$; Victimization: $\chi^2(1) = 20.09$, $p < .001$, $\phi = -.26$). Similar to cyber IPV, female participants experienced more perpetration (Male: $n = 87$, 29.29%; Female: $n = 121$, 40.74%) and victimization (Male: $n = 82$, 27.33%; Female: $n = 101$, 34.01%) of in-person IPV.

Item Analysis

All 17 items of the CARS-K measuring cyber IPV perpetration's SMC values ranged from .52 to .99 and all 17 items of the CARS-K measuring cyber IPV victimization's SMC values were between .73 and 1.00. Since all items showed higher SMC values than the cutoff .40 (DeVellis & Thorpe, 2021), 17 items each for perpetration and victimization of cyber IPV, a total of 34 items, were included in further

analyses. Although several items exhibited relatively high SMC values ($> .90$), this pattern is consistent with the dichotomous structure and the WLSMV estimation, which tends to yield stronger standardized loadings under restricted variance conditions (Flora & Curran, 2004). Therefore, the high SMC values were interpreted as reflecting strong internal consistencies rather than redundancy.

Reliability Analysis

Internal consistencies of the CARS-K were assessed using KR-20 and McDonald's ω

reliability coefficient. Both perpetration and victimization of cyber IPV subscales, as well as total scale, showed high reliability. Specifically for cyber IPV perpetration, KR-20 coefficient values were .88 for psychological cyber aggression, .93 for sexual cyber aggression and cyber behavioral control, and .97 for total. ω reliability coefficient values of cyber IPV perpetration were .90 for psychological cyber aggression, .94 for sexual cyber aggression and cyber behavioral control, and .97 for total. Item-total correlations and KR-20 values of items measuring cyber IPV perpetration are presented in Table 1.

Table 1. Reliability of the CARS-K (Perpetration, $n = 300$)

Factor	Item number	Item-total correlation	KR-20 if deleted	Number of items	Reliability	Total
Psychological cyber aggression	1	.77	.83	5	.88	.97
	4	.76	.84			
	10	.77	.84			
	11	.81	.83			
	17	.47	.91			
Sexual cyber aggression	3	.78	.93	4	.93	
	7	.87	.90			
	8	.86	.91			
	16	.86	.91			
Cyber behavioral control	2	.76	.92	8	.93	
	5	.70	.92			
	6	.67	.92			
	9	.81	.91			
	12	.82	.91			
	13	.69	.92			
	14	.78	.92			
	15	.79	.92			

For cyber IPV victimization, KR-20 coefficient values were .91 for psychological cyber aggression, .95 for sexual cyber aggression, .94 for cyber behavioral control, and .97 for total. McDonald's ω reliability coefficient values were .93 for psychological cyber aggression, .96 for sexual cyber aggression and cyber behavioral control, and .98 for total. Although overall KR-20 values and ω coefficient values were relatively high ($> .90$), this pattern is consistent with the dichotomous coding of items and conceptual homogeneity of the CARS-K subscales

rather than redundancy (Clark & Watson, 2019). Item-total correlations and KR-20 values of items measuring cyber IPV victimization were presented in Table 2.

Item Factor Analysis (IFA)

IFA was conducted to examine whether three-factor structures consisting of psychological cyber aggression, sexual cyber aggression, and cyber behavioral control showed better fit indices for the Korean data than competing models for

Table 2. Reliability of the CARS-K (Victimization, $n = 300$)

Factor	Item number	Item-total correlation	KR-20 if deleted	Number of items	Reliability	Total
Psychological cyber aggression	1	.83	.87	5	.91	.97
	4	.79	.88			
	10	.82	.88			
	11	.78	.88			
	17	.64	.92			
Sexual cyber aggression	3	.84	.94	4	.95	
	7	.85	.94			
	8	.89	.92			
	16	.90	.92			
Cyber behavioral control	2	.82	.93	8	.94	
	5	.73	.94			
	6	.80	.93			
	9	.82	.93			
	12	.85	.93			
	13	.70	.94			
	14	.81	.93			
	15	.81	.93			

both perpetration and victimization of cyber IPV. As in Watkins et al. (2018), single-factor models of cyber IPV perpetration and victimization were tested as competing models in this study.

For perpetration of cyber IPV, based on commonly accepted model fit criteria (i.e., $\chi^2/df \leq 5$, CFI $\geq .90$, TLI $\geq .90$, RMSEA $< .08$, and SRMR $< .05$; Marsh & Hocevar, 1985; Baumgartner & Homburg, 1996; MacCallum, Browne, & Sugawara, 1996; Byrne, 1998; Hu & Bentler, 1999; Diamantopoulos & Siguaw, 2000), the single-factor model of cyber IPV perpetration showed overall good fit indices

($\chi^2/df = 1.34$, CFI = 1.00, TLI = 1.00, RMSEA = .03, SRMR = .03). Although the three-factor model of cyber IPV perpetration showed relatively better fit indices in χ^2/df values ($\chi^2/df = 1.26$, CFI = 1.00, TLI = 1.00, RMSEA = .03, SRMR = .03), differences between two models appeared relatively small. Therefore, a scaled chi-squared difference test was conducted, and the difference was statistically significant ($\Delta\chi^2(3) = 14.60$, $p < .01$). Considering the improvement in χ^2/df , the significant chi-square difference, and the three-factor structure of cyber IPV perpetration

Table 3. Model Fit Indices of the CARS-K (Perpetration)

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Single factor	158.91	119	1.34	1.00	1.00	.03	.03
Three factor	146.08	116	1.26	1.00	1.00	.03	.03

Note. CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square.

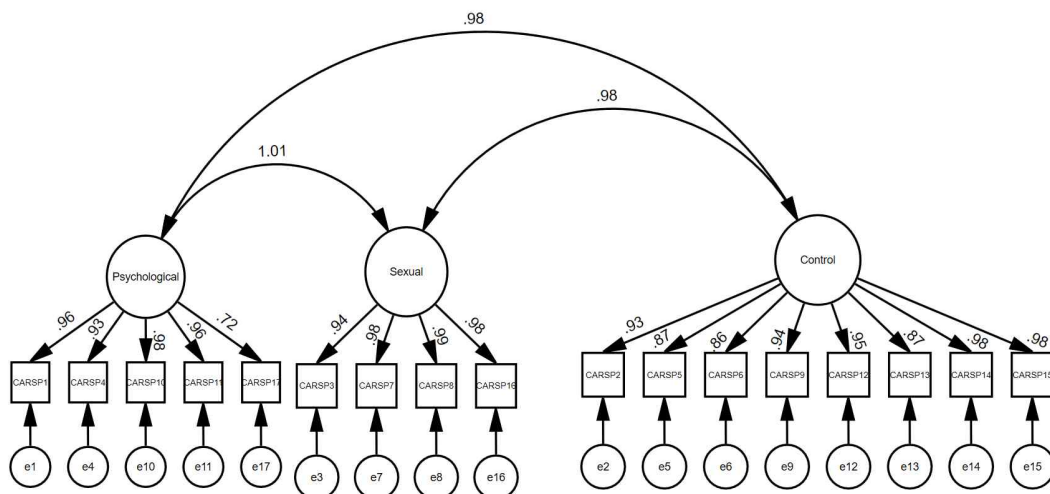


Figure 1. Factor Structure of the CARS-K (Perpetration)

was proposed by Watkins et al. (2018), the three-factor model of cyber IPV perpetration was selected as the final model in this study. Fit indices of two models of cyber IPV perpetration were summarized in Table 3, and the factor structure of the final model is illustrated in Figure 1. Although the standardized correlation between the psychological and sexual cyber aggression exceeded 1.00 ($r = 1.01$), this is likely due to the high intercorrelation and dichotomous nature of the data, rather than an indication of model misspecification (a Heywood

case; Kline, 2016). Therefore, the result suggests that these factors are highly related but conceptually distinct.

Similarly, for victimization of cyber IPV, the single-factor model also showed overall good fit indices ($\chi^2/df = 1.67$, CFI = 1.00, TLI = 1.00, RMSEA = .05, SRMR = .03). While the three-factor model of cyber IPV victimization showed better χ^2/df and RMSEA values than the single-factor model of cyber IPV victimization ($\chi^2/df = 1.54$, CFI = 1.00, TLI = 1.00, RMSEA = .04, SRMR = .03),

Table 4. Model Fit Indices of the CARS-K (Victimization)

Model	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Single factor	198.75	119	1.67	1.00	1.00	.05	.03
Three factor	178.71	116	1.54	1.00	1.00	.04	.03

Note. CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square.

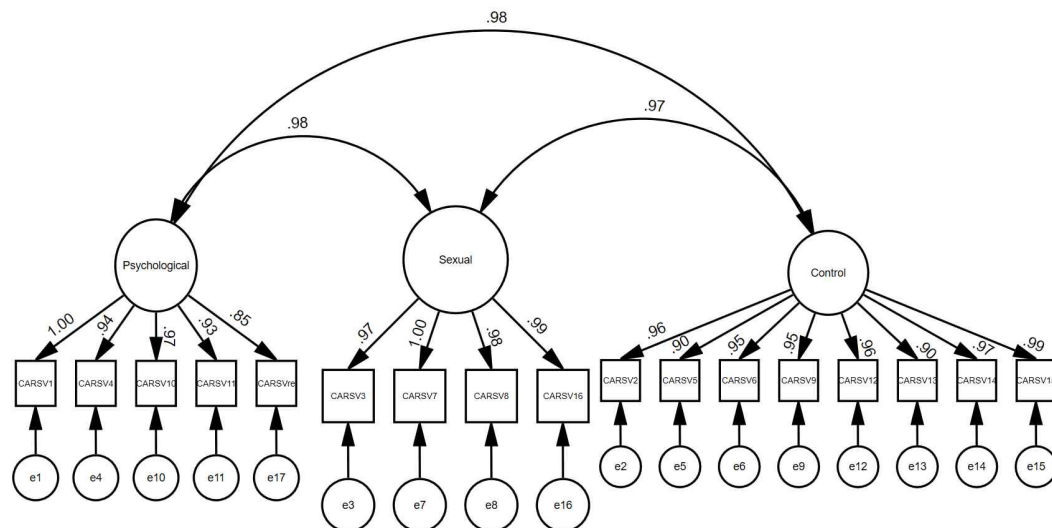


Figure 2. Factor Structure of the CARS-K (Victimization)

differences between two models of cyber IPV victimization appeared to be relatively small. Therefore, a scaled chi-squared difference test was conducted. The difference between two models of cyber IPV victimization was statistically significant ($\Delta x^2(3) = 18.04, p < .001$). Considering the three-factor model of cyber IPV victimization showed improvement in x^2/df and RMSEA, the result of the scaled chi-squared difference test, and the three-factor model of cyber IPV victimization was proposed by Watkins et al. (2018), the three-factor model of cyber IPV victimization was selected as the final model in the present study. Fit indices are summarized in Table 4, and the factor structure of the final model of cyber IPV victimization was depicted in Figure 2.

Convergent Validity

To assess the convergent validity of the CARS-K, Pearson correlation analyses were conducted between the CARS-K, the CTS-2, the trait anger subscale of the STAXI-K, the BSI-18, the Korean version of the Relational Aggression Scale, the AUDIT-K, and the K-MSI. Total scores of cyber IPV perpetration were positively correlated with cyber IPV victimization ($r = .94, p < .01$), in-person IPV perpetration ($r = .94, p < .01$), in-person IPV victimization ($r = .90, p < .01$). For victimization of cyber IPV, there were significant positive correlations between in-person IPV

perpetration ($r = .93, p < .01$), and in-person IPV victimization ($r = .93, p < .01$). Since correlations coefficients between the CARS-K total scales and subscales, and the CTS-2 were relatively high ($> .90$), Fisher's z test was conducted. For perpetration, the relationship between sexual cyber aggression of the CARS-K and sexual coercion of the CTS-2 ($r = .91, p < .01$) was stronger than the relationship between sexual cyber aggression of the CARS-K and psychological aggression of the CTS-2 ($r = .85, p < .01; z = 3.20, p < .01$). This suggests that the CARS-K cyber sexual aggression subscales measure a construct more similar to sexual coercion than in-person psychological aggression. For victimization, the relationship between sexual cyber aggression of the CARS-K and sexual coercion of the CTS-2 ($r = .91, p < .01$) was stronger than the relationship between sexual cyber aggression of the CARS-K and psychological aggression of the CTS-2 ($r = .83, p < .01; z = 4.08, p < .001$) and sexual cyber aggression of the CARS-K and physical assault of the CTS-2 ($r = .86, p < .01; z = 2.55, p < .05$). These results suggest that the CARS-K sexual cyber aggression subscales measure a construct more similar to sexual coercion than other forms of in-person IPV. Differences of other relationships between the CARS-K subscales and the CTS-2 subscales were not significant. Relationships between the CARS-K total scale and subscales, and the CTS-2 are presented in Table 5.

Table 5. Correlations between Cyber IPV and In-person IPV

	1	2	3	4	5	6	7	8	9
1. CARS-K perp_total									
2. CARS-K perp_psy	.95								
3. CARS-K perp_sex	.94	.90							
4. CARS-K perp_control	.97	.87	.86						
5. CARS-K vict_total	.94	.90	.92	.89					
6. CARS-K vict_psy	.90	.88	.89	.83	.96				
7. CARS-K vict_sex	.90	.86	.91	.84	.94	.88			
8. CARS-K vict_control	.91	.85	.87	.88	.98	.90	.87		
9. CTS-2 perpetration	.94	.90	.92	.88	.93	.90	.90	.89	
10. CTS-2 victimization	.90	.87	.89	.85	.93	.90	.89	.90	.95

Note. Perp: Perpetration; Vict: Victimization; Psy: Psychological cyber aggression; Sex: Sexual cyber aggression; Control: Cyber behavioral control.

All correlations were significant ($ps < .01$).

Table 6. Convergent Validity of the CARS-K (Perpetration)

	1	2	3	4	5	6	7	8
1. CARS-K perp_total								
2. CARS-K perp_psy	.95							
3. CARS-K perp_sex	.94	.89						
4. CARS-K perp_control	.97	.87	.86					
5. STAXI-K	.40	.42	.31	.40				
6. BSI-18	.49	.49	.44	.47	.55			
7. Relational aggression	.77	.76	.69	.75	.56	.59		
8. AUDIT-K	.56	.50	.53	.56	.27	.33	.53	
9. K-MSI	-.43	-.47	-.37	-.40	-.38	-.48	-.52	-.22

Note. Perp: Perpetration; Psy: Psychological cyber aggression; Sex: Sexual cyber aggression; Control: Cyber behavioral control; Relational aggression: Relational Aggression Scale.

All correlations were significant ($ps < .01$).

Additionally, total scores of cyber IPV related variables. Specifically, there were significant positive correlations between cyber

IPV perpetration and trait anger ($r = .40, p < .01$), psychological symptoms ($r = .49, p < .01$), relational aggression ($r = .77, p < .01$), and problematic alcohol use ($r = .56, p < .01$). Cyber IPV perpetration was negatively correlated with relationship satisfaction ($r = -.43, p < .01$). Correlations between cyber IPV perpetration and related variables were presented in Table 6.

There were also significant relationships between victimization of cyber IPV and related variables. The victimization of cyber IPV was positively correlated with trait anger ($r = .37, p < .01$), psychological symptoms ($r = .52, p < .01$), relational aggression ($r = .75, p < .01$), problematic alcohol use ($r = .54, p < .01$). Similar to perpetration of cyber IPV, there was significant negative correlation between victimization of cyber IPV and relationship

satisfaction ($r = -.49, p < .01$). Correlations between victimization of cyber IPV and related variables were presented in Table 7.

Discussion

This study aimed to translate and validate the Korean version of the Cyber Aggression in Relationships Scale (CARS), developed by Watkins et al. (2018). Based on SMC values, all 34 translated items of the CARS were included in analyses. Reliability analysis indicated high internal consistencies for both perpetration and victimization of cyber IPV. Furthermore, the three-factor models consisting of psychological cyber aggression, sexual cyber aggression, and cyber behavioral control were supported for both

Table 7. Convergent Validity of the CARS-K (Victimization)

	1	2	3	4	5	6	7	8
1. CARS-K vict_total								
2. CARS-K vict_psy	.96							
3. CARS-K vict_sex	.94	.88						
4. CARS-K vict_control	.98	.90	.87					
5. STAXI-K	.37	.36	.32	.37				
6. BSI-18	.52	.51	.47	.50	.55			
7. Relational aggression	.75	.71	.71	.74	.56	.59		
8. AUDIT-K	.54	.51	.51	.53	.27	.33	.53	
9. K-MSI	-.49	-.50	-.45	-.47	-.38	-.48	-.52	-.22

Note. Vict: Victimization; Psy: Psychological cyber aggression; Sex: Sexual cyber aggression; Control: Cyber behavioral control; Relational aggression: Relational Aggression Scale.

All correlations were significant ($p < .01$).

perpetration and victimization of cyber IPV. The CARS-K was also demonstrated appropriate convergent validity through significant correlations with related variables including in-person IPV, trait anger, psychological symptoms, relational aggression, problematic alcohol use, and relationship satisfaction.

The CARS-K was demonstrated high internal consistencies across both perpetration and victimization of cyber IPV. Although both the KR-20 and McDonald's ω coefficient were relatively high ($> .90$), this pattern appears to reflect the dichotomous coding of items and the conceptual homogeneity of the CARS-K, rather than item redundancy (Clark & Watson, 2019). However, because the present study employed a cross-sectional design, test-retest reliability could not be assessed. Therefore, future studies should evaluate the test-retest reliability of the CARS-K. Regarding specific items, the 17th item of cyber IPV perpetration showed slightly higher reliability when removed, and its item-total correlation ($= .47$) was lower than those of other items (from $.76$ to $.81$), suggesting a potential decrease in internal consistency. On reviewing the content, this item may reflect passive aggression, which may differ from other items that seems to represent active forms of aggression, such as using or sharing information. This difference in behavioral expression may account for the reduced internal consistency of this item. Although the behavioral manifestation of this item differs from those of other items, it

was considered to reflect the same underlying construct of cyber aggression. Accordingly, this item was retained in the final version of the CARS-K. In contrast, the corresponding item, the 17th item of cyber IPV victimization, did not substantially reduce reliability, possibly because victims may perceive passive and active forms of aggression as similarly harmful.

The three-factor structures consisting of psychological cyber aggression, sexual cyber aggression, and cyber behavioral control, were accepted as final models in both perpetration and victimization of cyber IPV. Although differences in model fit indices between two models were relatively small, scaled chi-squared difference tests showed differences between single-factor models and three-factor models were significant. These results indicated that cyber IPV is a multifactor construct, consistent with Watkins et al. (2018). However, since correlations between total scales and subscale were relatively high (Perpetration: $r = .86$ to $.97$; Victimization: $r = .87$ to $.98$), Fisher's z tests were conducted. Fisher's z test showed that perpetration of sexual cyber aggression was more related to perpetration of sexual coercion than perpetration of in-person psychological aggression, and the victimization of sexual cyber aggression was more related to victimization of sexual coercion than victimization of other forms of in-person IPV. Considering these results, it seems more appropriate to view cyber IPV as comprising multiple subtypes.

In assessment of convergent validity of the CARS-K, the CARS-K showed significant correlation between the CTS-2, the trait anger subscale of the STAXI-K, the BSI-18, the Korean version of the Relational Aggression Scale, the AUDIT-K, and the K-MSI. Specifically, perpetration of cyber IPV was positively correlated with perpetration of in-person IPV, trait anger, and relational aggression. Additionally, victimization of cyber IPV was positively correlated with victimization of in-person IPV and psychological symptoms. As expected, problematic alcohol use was positively correlated with both perpetration and victimization of cyber IPV, and relationship satisfaction was negatively correlated with both perpetration and victimization of cyber IPV. These results are consistent with previous research demonstrating a link between cyber IPV and in-person IPV (e.g., Schnurr et al., 2013; Leisring & Giumetti, 2014; Marganski & Melander, 2015; Taccini & Mannarini, 2024). Moreover, similar to perpetration of in-person IPV, significant relationships were observed among perpetration of cyber IPV, trait anger, relational aggression, and problematic alcohol use (e.g., Leonard & Senchak, 1993; Eckhardt et al., 2002; Yang, 2009; Kim & Park, 2021), indicating that these variables also influence the perpetration of cyber IPV. The positive correlations between victimization of cyber IPV and psychological symptoms and problematic alcohol use may indicate that individuals who

experienced cyber IPV victimization, similar to individuals who experienced in-person IPV victimization, may suffer from psychological symptoms and problematic alcohol use. However, since there are differences between cyber IPV and in-person IPV, individuals who experienced cyber IPV and in-person IPV may differ in psychological outcomes such as aspect or severity. Future studies should examine differences in the negative mental outcomes of individuals who experienced two types of relational violence, or the interaction between cyber IPV and in-person IPV. Since cyber IPV measured by the CARS-K is comparable to in-person IPV measured by the CTS-2, the CARS-K may be helpful to related research. Moreover, similar to in-person IPV, both perpetration and victimization of cyber IPV were negatively correlated with relationship satisfaction. Future studies should explore whether lower relationship satisfaction is a risk factor for cyber IPV, or an effect of cyber IPV, or both. Lastly, there were also significant relationships between cyber IPV perpetration and psychological symptoms ($r = .49, p < .01$) which were expected to be related with victimization of cyber IPV, and cyber IPV victimization and trait anger ($r = .37, p < .01$) and relational aggression ($r = .75, p < .01$) which were expected to be related with perpetration of cyber IPV. Majority of participants reported having experienced both perpetration and victimization of cyber IPV may partially explain these relationships.

Consistent with Watkins et al. (2018), a significant positive correlation was found between perpetration and victimization of cyber IPV ($r = .94, p < .01$), and over half of participants ($n = 166, 55.33\%$) experienced both perpetration and victimization of cyber IPV. These results suggest the bidirectionality of cyber IPV, in which perpetration and victimization of cyber IPV coexist in the same individuals. While these findings should not be used to blame victims of cyber IPV or justify perpetrators of cyber IPV, it highlights the importance of assessing both perpetration and victimization of cyber IPV to gain a comprehensive understanding of individuals' cyber IPV experiences. Since the CARS-K can measure both perpetration and victimization of cyber IPV, the CARS-K may contribute to a more comprehensive understanding of cyber IPV and related research such as comparing individuals who experience both perpetration and victimization, only perpetration, or only victimization.

Interestingly, while exploratory analyses, female participants reported significantly higher frequencies of both perpetration and victimization of cyber and in-person IPV compared to male participants. The finding that women reported higher frequencies of victimization is consistent with the study by Fanslow, Meller, Gulliver, and McIntosh (2023), whereas the finding that women also reported higher frequencies of perpetration contradicts a traditional perspective that frames IPV as predominantly

male-perpetrated violence against women (e.g., Romero-Martínez, Lila, Sarrate-Costa, Comes-Fayos, & Moya-Albiol, 2023). Considering that perpetration and victimization were highly correlated in both cyber IPV and in-person IPV in this study, these results may suggest that female participants may be more likely to engage in bidirectionality of IPV, experiencing both perpetration and victimization. Additionally, there is a possibility of gender differences in the perception of IPV. Indeed, Kim, Koo, and Choi (2020) showed that female university students showed higher recognition of IPV. In addition, some studies have reported patterns that contradict the notion that men are likely to be perpetrators of IPV and women are likely to be victims of IPV (e.g., Straus, 2004; Chan, 2011), showing mixed and inconsistent results regarding gender differences in IPV. Archer (2000) demonstrated that men and women equally can be victims of IPV, and Harned (2001) found that women tend to more perpetrate emotional abuse, and men tend to more perpetrate psychological forms of intimidation and threats. Moreover, March et al. (2025) suggested avoiding the gender paradigm of IPV, which describes men as perpetrators of IPV and women as victims of IPV. Taken together, these findings suggest that IPV research should avoid restricting samples to men when studying perpetrators or to women when studying victims. Additionally, future studies should also give attention to male victims of IPV.

The current findings should be interpreted with respect to the following limitations. First, participants in this study were unmarried individuals aged 19 to 39, and over half were women ($n = 193$, 64.33%), which limits the generalizability of the findings. It is still possible that different factor structures may be more appropriate in other groups such as married couples or older populations. Therefore, future research should examine whether factor structures of the CARS-K are consistent across diverse relational and demographic groups.

Second, although perpetration and victimization of cyber IPV were prevalent among participants, and more than half of participants reported having experienced both perpetration and victimization of cyber IPV, the current results are based on dichotomous coding. Therefore, it is difficult to interpret whether the current results reflect the severity of violence. Future research should adopt an approach similar to the CTS-2 (Straus et al., 1996), which distinguishes minor and severe violence. Specifically, assigning weights to severe cyber IPV, or assessing the presence of severe cyber IPV, could help identify individuals experiencing more severe forms of cyber IPV. Moreover, for participants who responded to a score of 7 (Not in the past 6 months, but it did happen before), exploring the reasons for the absence of cyber IPV experiences during the past six months may yield valuable information about contextual factors associated with cyber IPV severity.

Third, there is a possibility that participants may have underreported their cyber IPV perpetration due to social desirability. Indeed, perpetrators may minimize or deny their actions (Kang & Lee, 2008). Chae (2022) validated the subscale of CDAQ (Borrajó, Gámez-Guadix, Pereda, & Calvete, 2015) measuring only victimization of cyber dating abuse for this reason. Although a majority of participants in this study reported some levels of cyber IPV perpetration, the possibility of underreporting should not be ruled out. For this reason, future research should consider supplementing self-reported data with other information sources such as clinician ratings.

Despite these limitations, this study contributes by providing a validated assessment instrument for measuring cyber IPV, a growing concern that is distinct from in-person IPV. In particular, the inclusion of the reliable and valid scale measuring perpetration of cyber IPV represents a meaningful contribution. Given the bidirectionality of cyber IPV also suggested in the Korean sample, the scale that assesses both perpetration and victimization of cyber IPV is expected to provide a more comprehensive understanding of individuals' cyber IPV experiences. Additionally, the CARS-K, measuring both perpetration and victimization of cyber IPV, may facilitate not only research examining psychological properties of individuals who experience victimization of cyber IPV, but also studies exploring the characteristics of individuals

who perpetrate cyber IPV or experience both perpetration and victimization, as well as research comparing cyber IPV and in-person IPV, and interaction of two types of relational violence.

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관계 내 사이버 공격 척도 한국판(CARS-K)의 타당화 연구

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본 연구는 사이버 IPV의 가해 경험과 피해 경험을 수량적으로 측정 및 평가할 수 있는 관계 내 사이버 공격 척도(Cyber Aggression in Relationships Scale, CARS)를 국내 실정에 맞게 번안하고 타당화하고자 하였다. 이를 위해 만 19세에서 만 39세 사이의, 약 6개월 동안의 친밀한 관계의 데이트 경험이 있는, 미혼 성인 남녀 300명을 대상으로 응답을 수집하였다. 가해 경험과 피해 경험 각각 17문항으로 구성된, 34문항의 척도에 대한 문항 분석, 신뢰도 분석, 문항 요인분석, 수렴 타당도 분석을 실시하였다. 34문항으로 구성된 척도로 문항 요인분석과 1요인 모형과 3요인 모형의 카이제곱 차이를 검증한 결과, 국내에서도 가해와 피해 모두에서 단일 요인 모형보다는 심리적 사이버 공격, 성적 사이버 공격, 사이버 행동 통제로 구성된 3요인 모형이 더 적합한 것으로 나타났다. 또한 적절한 수렴 타당도와 내적 합치도를 보여 번안한 CARS-K가 사이버 IPV 경험을 측정하는 데 있어 타당한 도구임이 확인되었다.

주요어 : IPV, 사이버 IPV, 친밀한 관계, 타당화, 문항 요인분석

Appendix

Cyber Aggression in Relationships Scale Korean Version (CARS-K)

아무리 관계가 좋은 연인이라도, 때로는 서로 의견이 맞지 않거나, 화가 나거나, 기분이 상하는 순간이 있습니다. 이러한 순간에 우리는 소셜 미디어(페이스북, 트위터, 인스타그램, 블로그), 핸드폰 등을 통해서 표현하기도 합니다. 아래에 나열된 행동들을 읽어보고, 지난 6

개월 동안 이러한 모습이 당신에게 얼마나 자주 있었는지 표시해 주십시오. 만약 이러한 행동들이 지난 6개월 동안은 일어나지 않았어도, 그 이전에 이러한 행동들이 나타난 적이 있다면 '7'에 표시해 주십시오.

0: 한 번도 나타난 적이 없음; 1: 지난 6개월 동안 1회; 2: 지난 6개월 동안 2회; 3: 지난 6개월 동안 3-5회; 4: 지난 6개월 동안 6-10회; 5: 지난 6개월 동안 11-20회; 6: 지난 6개월 동안 20회 이상; 7: 지난 6개월 동안은 나타나지 않았지만, 이전에 있었음.

표 A1. 한국판 관계 내 사이버 공격 척도 (가해)

요인	문항 번호	변안된 문항
심리적 사이버 공격	1	나는 나의 연인을 깎아내리거나 모욕감을 주기 위해 SNS에 게시된 정보를 사용했다.
	4	나는 내 연인의 개인적이거나 창피할 수 있는 일들을 허락 없이 문자나 SNS를 통해 공개했다.
	10	나는 나의 연인을 문자나 SNS 메시지를 통해 협박하거나 괴롭혔다.
	11	나는 SNS에 나의 연인에게 상처가 될 만한 글이나 내용을 게시했다.
	17	나는 나의 연인에게 상처를 주기 위해 일부러 연락을 무시했다.
성적 사이버 공격	3	나는 온라인으로 나의 연인에게 연인이 밝히고 싶지 않은 성적인 내용들에 대해 물어봤다.
	7	나는 나의 연인의 온라인 프로필에 원치 않는 성적인 글이나 사진을 달았다.
	8	나는 나의 연인이 나에게 성적인 사진이나 나체 사진을 보내도록 강요했다.
	16	나는 나의 연인이 원치 않아 하는 데도 불구하고 온라인상에서 성적인 이야기를 하게 만들려고 했다.
사이버 행동 통제	2	나는 나의 연인이 누구와 연락하고 있는지 보기 위해 허락 없이 이메일을 확인했다.
	5	나는 내 연인의 위치 소재를 SNS를 통해 지속적으로 확인했다.
	6	나는 나의 연인이 누구와 연락하는지 확인하기 위해 허락 없이 연인의 핸드폰을 확인했다.
	9	나는 나의 연인의 인터넷 활동을 허락 없이 감시했다.
	12	나는 나의 연인의 허락 없이 연인의 SNS 계정에 접속하여 활동 기록을 봤다.
	13	나는 나의 연인이 어디서 무엇을 하고 있는지에 대해 캐묻는 온라인 메시지를 여러 번 반복해서 보냈다.
	14	나는 GPS 기능을 통해 허락 없이 나의 연인의 위치를 추적했다.
	15	나는 나의 연인의 허락 없이 연인의 핸드폰, 이메일, 혹은 SNS 프로필에서 정보를 빼내갔다.

이번에는 위와 같은 상황들이 **당신의 관계에서 상대방으로 인해 얼마나 자주 발생했었는지에 대해 묻는 문항**입니다. 아래에 나열된 행동들을 읽어보고, **지난 6개월 동안 이러한 상황이 당신에게 얼마나 자주 있었는지 표시**해 주십시오. 만약 이러한 상황들이 지난 6개월 동안은 일어나지 않았어도, 그 이전에 이러한 상황들이 있었다면 '7'에 표시해 주십시오.

0: 한 번도 나타난 적이 없음; 1: 지난 6개월 동안 1회; 2: 지난 6개월 동안 2회; 3: 지난 6개월 동안 3-5회; 4: 지난 6개월 동안 6-10회; 5: 지난 6개월 동안 11-20회; 6: 지난 6개월 동안 20회 이상; 7: 지난 6개월 동안은 나타나지 않았지만, 이전에 있었음.

표 A2. 한국판 관계 내 사이버 공격 척도 (피해)

요인	문항 번호	번안된 문항
심리적 사이버 공격	1	나의 연인은 나를 깎아내리거나 모욕 주기 위해 SNS에 게시된 정보를 사용했다.
	4	나의 연인은 나의 개인적이거나 창피할 수 있는 일들을 허락 없이 문자나 SNS를 통해 공개했다.
	10	나의 연인은 나를 문자나 SNS 메시지를 통해 협박하거나 괴롭혔다.
	11	나의 연인은 SNS에 나에게 상처가 될 만한 글이나 내용을 게시했다.
	17	나의 연인은 나에게 상처를 주기 위해 일부러 연락을 무시했다.
성적 사이버 공격	3	나의 연인은 온라인으로 내가 밝히고 싶지 않은 성적인 내용들에 대해 물어봤다.
	7	나의 연인은 나의 온라인 프로필에 원치 않는 성적인 글이나 사진을 달았다.
	8	나의 연인은 내가 성적인 사진이나 나체 사진을 보내도록 강요했다.
	16	나의 연인은 내가 원치 않아 하는 데도 불구하고 온라인상에서 성적인 이야기를 하게 만들려고 했다.
사이버 행동 통제	2	나의 연인은 내가 누구와 연락하고 있는지 보기 위해 허락 없이 이메일을 확인했다.
	5	나의 연인은 나의 위치 소재를 SNS를 통해 지속적으로 확인했다.
	6	나의 연인은 내가 누구와 연락하는지 확인하기 위해 허락 없이 나의 핸드폰을 확인했다.
	9	나의 연인은 나의 인터넷 활동을 허락 없이 감시했다.
	12	나의 연인은 나의 허락 없이 나의 SNS 계정에 접속하여 활동 기록을 봤다.
	13	나의 연인은 어디서 무엇을 하고 있는지에 대해 캐묻는 온라인 메시지를 여러 번 반복해서 보냈다.
	14	나의 연인은 GPS 기능을 통해 허락 없이 나의 위치를 추적했다.
	15	나의 연인은 나의 허락 없이 내 핸드폰, 이메일, 혹은 SNS 프로필에서 정보를 빼내 갔다.