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Examining the validity and reliability of the cyber-aggression and cyber-victimization scale

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A B S T R A C T

This study explored the validity and reliability of the cyber-aggression and cyber-victimization (CAV) scale. Data to assess this 24-item scale was collected from 609 students in grades 6 and 7 in the Lower Mainland of British Columbia via a self-report questionnaire. Confirmatory factor analysis provided evidence for construct validity, with strong support for a two-factor model: cyber-aggression perpetration (CAV-P) and cyber-victimization (CAV-V). Structural invariance was found for boys and girls, as well as for participants of Asian descent. Associations between the two subscales demonstrated adequate concurrent validity. Finally, partial correlations, in directions as expected with other social-emotional outcomes (e.g., depression, anxiety, rumination, aggression and school connectedness), provided robust evidence of convergent validity.

The social aspects of the internet have fundamentally shifted the connections youth have with one another. From a remarkably young age, adolescents are in near constant communication with each other through mobile devices, instant messaging, and social networking websites (e.g. Facebook). Indeed, recent reports indicate that the use of social networking sites is highest among adolescents (Lenhart, Purcell, Smith, & Zickuhr, 2010), and that 9 out of 10 teenagers in North America have their own mobile phone (Lenhart, 2012). Unfortunately, with the advent of communication technologies come online risks such as cyber-aggression and cyber-victimization (e.g., Law, Shapka, Hymel, Olson, & Waterhouse, 2012).

Cyber-aggression (also known as cyberbullying, electronic bullying, or internet harassment) is defined as aggression that occurs virtually via a digital/electronic medium such as a mobile phone or over the internet (Corcoran, McGuckin, & Prentice, 2015; Patchin & Hinduja, 2006). Initially assumed to simply be an extension of schoolyard or traditional bullying (Dooley, Pyzalski, & Cross, 2009), recent work has established that the three main tenets of bullying (a power differential between the perpetrator and victim, an intent to harm, and repetition over time; Olweus, 1993)

may not exist or are very different in an online venue (Law et al., 2012). To this end, researchers have argued that due to the unique structural and functional aspects of the internet—the ability to be anonymous; the lack of nonverbal cues; the permanence of digital data; the 24/7 accessibility—cyberbullying is a distinct form of aggression that is complex and warrants study in its own right (Law et al., 2012; Runions, Shapka, Dooley, & Modecki, 2013). As such, for the purposes of this paper, and as recommended by Corcoran et al. (2015), we use the term 'cyber-aggression' instead of cyberbullying to reflect the broader scope of cyber-aggressive acts that do not necessarily reflect the characteristics of traditional forms of bullying.

Extant research over the past decade has shown that being victimized online is associated with depression (Tynes, Rose, & Williams, 2010) and suicide ideation (Bonanno & Hymel, 2013; Hinduja & Patchin, 2010), as well as anxiety (Juvonen & Gross, 2008; loneliness (Şahin, 2012), and emotional distress (Patchin & Hinduja, 2006). It has also been linked to decreases in academic achievement (Beran & Li, 2007), increased school absences (Katzer, Fetchenhauer, & Belschak, 2009; Mitchell, Wolak, & Finkelhor, 2005), increased substance abuse (Dehue, Bolman, & Vollink, 2009; Ybarra & Mitchell, 2007), poorer relationships with parents (Beran & Li, 2007), and low self esteem (Didden et al., 2009). In fact, it has been hypothesized that the impact of being cybervictimized may be more emotionally damaging than traditional forms of

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bullying due to the permanent nature of digital information, as well as the inability to escape from it in your own home (Runions et al., 2013; Tokunaga, 2010). Developmental outcomes are also poorer for youth who engage in cyberbullying (Spears, Taddeo, Daly, Stretton, & Karklins, 2015). For instance, those who cyberbully others are more likely exhibit other problem behavior, such as externalizing disorders, and are less likely to engage in prosocial behaviors (Campbell, Slee, Spears, Butler, & Kift, 2013). Li (2007) has also linked cyberbullying with low academic achievement.

One of the main issues that has plagued research on cyberbullying/cyber-aggression has been a lack of agreement about how to measure it. Historically, researchers have measured it one of two ways: 1) globally − which tends to use a single item to ask about cyberbullying activities within a given time frame (and participants are expected to have a priori understanding of the construct or a definition is provided); and 2) using multi-item, behavior-specific questions, which ask about engagement in specific cyber-aggressive behaviors and/or cyber-victimization experiences (Thomas, Connor, & Scott, 2014). Although most researchers have moved away from global or definition-based measures since they have been shown to underestimate the prevalence of cyber-aggression (Gradinger, Strohmeier, & Spiel, 2010), there is no consensus on which constellation of behaviors constitute cyber-aggression (Tokunaga, 2010), and very little work has been done exploring the psychometric properties of the behavioral-based measures that have been used. The current study attempts to fills this gap by examining the validity and reliability of the Cyber-Aggression And Cyber-Victimization Scale (CAV).

1. Measuring cyber-aggression and cyber-victimization

There are now thousands of peer-reviewed research articles about cyber-aggression, however the large majority of this work measures cyber-aggression with researcher-developed scales that were designed for a specific study (Tynes et al., 2010). This usually means that these measures have not been validated prior to use, nor have they, in many cases, had their psychometric properties reported (Sumter, Valkenburg, Baumgartner, Peter, & Van der Hof, 2015). Indeed, in a review by Berne et al. (2013), it was noted that less than half of the 44 studies reviewed provided information about internal consistency, and only a handful provided any information about validity. This makes it very difficult to make comparisons or find consistencies across studies. A prime example of this is the notable variation in the prevalence rates of cyberbullying victimization, which range from 6.5 to 72% across studies, depending on how it was measured (Tokunaga, 2010). To address this, there has been a call for systemization in the form of empirically validated and theoretically sound instruments to assess cyber-aggression and cyber-victimization (e.g., Berne et al., 2013; Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Tokunaga, 2010).

An important aspect of the cyber-aggression and cyber-victimization scale that is being validated in the current study, is that it measures both cyber-aggression and cyber-victimization. For online forms of aggression, the percentage of adolescents who are involved in cyber-aggression as both a perpetrator and a victim is much higher and more common (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012). As such, it is important to be able to uniquely identify these individuals. For traditional face-to-face forms of bullying, so called 'bully-victims' tend to be a vulnerable, but small group who fare the least well psychosocially (Kumpulainen, Rasanen, & Puura, 2001). Whether this is true for online aggression remains to be seen, but given the high comorbidity, it is important to measure them together.

Although there is a dearth of work exploring the validity of a comprehensive measure of cyber-aggression and cyber-victimization, we were able to find four studies that have attempted to do this. Three of these studies explored Chinese (Lam & Li, 2013), Italian (Palladino, Nocentini, & Menesini, 2015), or Spanish (with Gámez-Guadix, Villa-George, & Calvete, 2014) versions of cyber-aggression and cyber-victimization scales, and so cannot be generalized to English-speaking adolescents. The fourth study did explore an English-based measure, but it was validated with college-aged adults (Lee, Abell, & Holmes, 2015), who likely engage with the internet in very different ways than adolescents. The current work will therefore fill an important gap by being the first to explore the reliability and validity of a measure of cyber-aggression and cyber-victimization (CAV) with younger adolescents (aged 11−13) within a Canadian context. In addition, to this, given the diverse nature of the school district from where the data was collected, we were also able to validate this measure separately for adolescents of Asian descent and adolescents of European-descent (who are predominantly white, whose primary language is English, and whose families have typically been in Canada for multiple generations). We know that aggressive behavior is frowned upon in many Asian cultures (Kornadt, 2002), and indeed, there is work emerging to show that adolescents of Asian descent are motivated and react to cyber-aggression in ways that reflect their culture (Shapka & Law, 2013). This means that ensuring that cyber-aggression and cyber-victimization scales are valid and reliable for this unique cultural group is important.

2. The current study

The limitation of existing self-report instruments for the succinct measurement of cyber-aggression among adolescents, as well as the general absence of robust estimates of item and scale validity for cyber-aggression and victimization measures, led us to develop the CAV. The CAV is a multi-item scale for use with adolescents. It has been developed over the past six years with multiple samples that have ranged in age from 11 to 16. A notable and important quality of the CAV is that the items are not tied to any specific social network platform or mode of communicating, which is unique from many of the validation studies cited above (Lam & Li, 2013; Lee et al., 2015). Rather, as recommended by Sumter et al. (2015), the focus of the CAV is on the behavior and not on the specific technology used to enact the behavior (e.g., specific software such as Facebook or specific type of technology such as a computer or cellphone). For example, the CAV attempts to comprehensively tap into the myriad ways that adolescents can be aggressive to each other in an online context, such as by embarrassing, shaming, spreading rumours, making fun of, or insulting each other. This will ensure that the measure has longevity in that the behaviors will remain relevant and will not be dated if the technology changes. Finally, the CAV is notable for its length. It is an efficient measure, currently comprised of 24 items; 12 items for cyber-aggression perpetration (CAV-P) and 12 items for cyber-victimization (CAV-V). This length is ideal in that it allows a comprehensive assessment of the construct without being too long to administer as part of a larger questionnaire.

In summary, the purpose of this study is twofold: (a) to confirm the factor structure of the cyber-aggression and victimization scale (CAV) using confirmatory factor analysis, and (b) to determine whether there is convergent validity between scores of the CAV scale and other measures, such as anxiety, depression, aggression, and school connectedness. Four research questions guide this work: 1) Is there support for a two-factor model within the CAV scale (cyber-aggression perpetration and cyber-victimization)? 2) Does this factor structure hold for boys and girls? 3) Does this factor structure hold for adolescents of Asian descent? 4) Does the CAV scale show adequate convergent validity?