

The Structure of Cyber and Traditional Aggression:
An Integrated Conceptualization

by

David Lerner

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved June 2013 by the
Graduate Supervisory Committee:

Samuel Green, Chair
Robert Atkinson
Linda Caterino
Kathryn Nakagawa

ARIZONA STATE UNIVERSITY

August 2013

ABSTRACT

The phenomenon of cyberbullying has captured the attention of educators and researchers alike as it has been associated with multiple aversive outcomes including suicide. Young people today have easy access to computer mediated communication (CMC) and frequently use it to harass one another -- a practice that many researchers have equated to cyberbullying. However, there is great disagreement among researchers whether intentional harmful actions carried out by way of CMC constitute cyberbullying, and some authors have argued that "cyber-aggression" is a more accurate term to describe this phenomenon. Disagreement in terms of cyberbullying's definition and methodological inconsistencies including choice of questionnaire items has resulted in highly variable results across cyberbullying studies. Researchers are in agreement however, that cyber and traditional forms of aggression are closely related phenomena, and have suggested that they may be extensions of one another. This research developed a comprehensive set of items to span cyber-aggression's content domain in order to 1) fully address all types of cyber-aggression, and 2) assess the interrelated nature of cyber and traditional aggression. These items were administered to 553 middle school students located in a central Illinois school district. Results from confirmatory factor analyses suggested that cyber-aggression is best conceptualized as integrated with traditional aggression, and that cyber and traditional aggression share two dimensions: direct-verbal and relational aggression. Additionally, results indicated that all forms of aggression are a function of general aggressive tendencies. This research identified two synthesized models combining cyber and traditional aggression into a shared framework that demonstrated excellent fit to the item data.

ACKNOWLEDGMENTS

I would like to thank Robert Friedle, Keri Knuckles, and Keke Lai for their contributions to this project – without your assistance, this would not have been possible. I would also like to express appreciation to my dissertation chair, Samuel Green, and my committee members, Linda Caterino, Kathryn Nakagawa, and Robert Atkinson. Thank you for your guidance and advice throughout the research process.

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	viii
LIST OF FIGURES	ix
INTRODUCTION	1
LITERATURE REVIEW	8
Defining Bullying: The Olweus Definition.....	8
The Three Criteria of Bullying Behavior.....	10
Types of Bullying: Physical and Verbal.....	12
The Third Type of Bullying: Relational.....	12
Bullying vs. Aggression.....	14
Factor Analysis and Bullying Types.....	14
Gender Differences Regarding Bullying Sub-Types	16
Age and Bullying.....	17
The Profiles of Bullies.....	18
The Profiles of Victims	20
Outcomes for Bullies, Victims, and Bully-Victims	20
Outcomes for Bullies	20
Outcomes for Victims.....	21
Outcomes for Bully-Victims	21
Bullying Outcomes and Bullying Subtypes	22
Summary of the Literature on Bullying.....	23
Defining Cyberbullying	24

The Content Domain of Cyberbullying	26
Modalities of Cyberbullying	27
Features Unique to Cyberbullying	28
Anonymity and De-Individuation	28
Contraindication: Not Always Anonymous	29
The Ubiquity of Cyberbullying	30
Severe Consequences of Ubiquity	30
Defining Cyberbullying and the Criteria of Traditional Bullying	31
Imbalance of Power and Cyberbullying.....	32
Anonymity	32
CMC Ability	33
Ubiquity	33
Repitition Over Time	34
Summary of Issues Concerning the Criteria.....	35
Measurement of Cyberbullying: Methodological Inconsistencies	35
Framing Cyberbullying Questionnaire Items	36
The Definitional Approach with Simple Yes/No Items	36
The Definitional Approach with Specific Items	37
The Behavioral Approach.....	37
Classifying Cyberbullies	38
Dichotomous Classifications	38
Criticism.....	39
Polytomous Classifications.....	39

Items and the Multi-Dimensionality of Cyberbullying	40
Gender and Cyberbullying	41
Item Selection Impact on the Prevalence among Genders	42
Overt Cyber-Items	42
Relational Cyber-Items.....	43
Age and Cyberbullying	43
Summary of Issues Regarding Past Cyberbullying Research.....	44
Cyber Aggression: A more Accurate Term.....	44
Cyber-Aggression: An Extension of Traditional Aggression.....	46
Cyber-Aggression and Traditional Aggression Subtypes	48
Factor Analytic Explorations: Cyber and Traditional Aggression	48
Factor Analysis Containing both Cyber and Traditional.....	49
Factor Analysis Containing Cyber in Isolation.....	50
Cyber-Aggression as Interrelated to Traditional Aggression	53
Objectives of the Present Study	54
METHOD.....	56
Participants	56
Instrument.....	57
CMC Items	58
Items for Cyber-Aggression.....	58
Items for Traditional Aggression	60
Other Items	61
Overview of Analysis.....	61

Traditional Aggression Models	62
Cyber-Aggression Models.....	62
Combined Models.....	63
Procedure	63
Focus Group.....	63
Administration	65
RESULTS	67
Traditional Aggression.....	67
Cyber-Aggression.....	69
Combined Models	71
Hierarchical Combined Models	73
Factor Invariance Tests for Gender and Grade.....	74
DISCUSSION	77
The Structure of Traditional Aggression	77
The Structure of Cyber-Aggression.....	77
Combined Models	78
Bi-Factor Model with Four Group Factors	79
Nested Hierarchical Model with Four Group Factors	80
The Uniqueness of Cyber-Aggression	81
Cyber-aggression as Inherently Relational in Nature.....	83
Uniqueness of Questionnaire	84
Summary and Conclusion	85
Directions for Future Research	87

Investigation of Broader Populations	87
Adjustment of Timeframe	87
Online Presentation of Questionnaire	88
Improvement of Questionnaire.....	88
Exploration of Aggression Severity	88
Cyberbullying.....	90
Explorations of perceived anonymity and de-individuation.....	91
Retaliation	92
Gender and Age Differences	92
TABLES AND FIGURES.....	94
REFERENCES	128
APPENDIX	
A QUESTIONNAIRES	140
B OTHER FIGURES	149
C CONSENT AND ASSENT FORMS	159

LIST OF TABLES

Table	Page
1. Percent of Sample Engaging in Modalities of CMC	94
2. Percent of Sample Engaging in Modalities of CMC by Grade and Gender.....	95
3. Traditional aggression items by group factor	97
4. Means and Standard Deviations for Traditional Aggression across gender and age ..	98
5. Cyber-aggression items by group factor	99
6. Means and Standard Deviations for Cyber-aggression Items Across Gender and Grade.....	100
7. Factor loadings across genders for constrained bi-factor model	101
8. Factor loadings across grades for constrained b-factor model.....	104
9. Factor loadings across genders for constrained hierarchical model	107
10. Factor loadings across grades for constrained hierarchical model	109

LIST OF FIGURES

Figure	Page
1. Baseline model for a general aggression factor	111
2. Correlated three factor model for physical verbal, and relational	112
3. Hierarchical aggression model: Physical, verbal, and relational	113
4. Bi-factor model for aggression with three group factors	114
5. Baseline model for a general cyber-aggression factor	115
6. Correlated three factor model for cyber-aggression	116
7. Hierarchical cyber-aggression model: text, relational, and picture	117
8. Bi-factor model for cyber-aggression with three group factors	118
9. Bi-factor model with text and picture I	119
10. Bi-factor model with text and picture II	120
11. Baseline model for general aggression across cyber and traditional	121
12. Bi-factor model for general factors of traditional and cyber	122
13. Bi-factor model for aggression with four group factors	123
14. Bi-factor model for aggression with three group factors	124
15. Bi-factor model with four group factors physical and picture	125
16. Combined hierarchical bi-factor model with cyber factor	126
17. Combined hierarchical bi-factor model	127

The Structure of Cyber and Traditional Aggression: An Integrated Conceptualization

Of the many questions that surround the phenomenon of bullying among school-aged children, one has been answered unequivocally: bullying is the cause of serious aversive outcomes for all who are involved, be they bully, victim, or both (Nansel et. al., 2001). The term bullying refers to behaviors that comprise a specific sub-category of general aggression (Olweus, 1993). Aggression refers to any behavior that is carried out by an individual to do intentional harm to another (Coie & Dodge, 1988); bullying behaviors are those that are also carried out in circumstances in which the victim cannot easily defend him or herself, and are carried out repeatedly over a sustained period of time (Olweus, 1999).

In the United States, estimates of prevalence for bullying involvement range from 12 to as much as 50 percent (Nansel et. al., 2001; Whitney & Smith, 1993). Internationally, Nansel, Craig, and Overpeck, Saluja, and Ruan (2004) estimated similar numbers; between 9 to 54 percent of students have been reported to be involved in bullying in countries such as Sweden, Italy, Australia, Lithuania, and Japan.

Bullies and their victims experience aversive outcomes (Espelage & Swearer, 2003; Kraut et. al., 1998; Harris, Petrie & Willouby, 2002; Hoover & Stennhjem, 2003). Olweus (1999), for example, found in a longitudinal study that as many as 60 percent of boys categorized as bullies in grades 6 through 9 will be incarcerated at least once during adulthood. They are also more likely to engage in substance abuse, vandalism, and various other modes of antisocial behavior.

Victims present with a vast array of problems: school refusal, somatic issues, suicidality, depression, anxiety, and eating disorders are among the many negative

consequences that victims may experience (Borg, 1998; Katiala-Heino et. al., 1999; Striegel-Moore et. al., 2002). Olweus (1999) found in his longitudinal study that symptoms of depression may persist for victims into adulthood.

Perhaps the most dire outcomes have been associated with bully-victims – those who are bullied by some, and bully others in response. Kumpulainen and Rasanen (2002) performed a longitudinal study in which they found that this specific category had the highest rates of psychiatric referrals by the age of 15. There is no question that bullying is a persistent problem and causes difficulties for many children (Olweus, 1999).

Recently, the concept of *cyberbullying* has seized the attention of both researchers and the media alike (Hinduja & Patchin, 2008). Cyberbullying refers to the intentional use of computer mediated communication (CMC) to harm other people, and may take such forms as cruel emails or texts, the spreading of cruel rumors around the Internet, or the posting of embarrassing images onto websites. Recent reports of suicides and violence that have resulted from episodes of cyberbullying have appeared in national headlines. For example, an overweight student in Japan was photographed while getting undressed. The photo was spread around his community and he committed suicide after the humiliation became unbearable (Strom & Strom, 2005). Paulson (2003) wrote about a student photoshopping a female classmate's face to a pornographic image and then distributing this throughout the school. The ubiquitous nature of the Internet caused the picture to spread rapidly. Paulson also wrote about the practice of creating a variety of vicious websites, such as those dedicated to humiliating particular students, or those eliciting students to vote online as to who they believe is the most overweight in school.

Cyberbullying is similar to bullying in many respects – some have suggested that it is simply an extension of traditional bullying (Dempsey, Sulkowski, Dempsey, & Storch, 2011; Smith et. al., 2008). Both cyber and traditional bullying involve the intentional harming of another individual.

However, there are many aspects of cyberbullying that differ from that of traditional bullying – for example, cyberbullying can easily be perpetrated anonymously, can follow the victim home from school, and can potentially spread to an unlimited audience because of the ubiquitous nature of CMC (Li, 2006, 2007; Patchin & Hinduja, 2006).

Like traditional bullying, cyberbullying has been linked to variety of aversive outcomes for those involved (Kowalski & Limber, 2007). For example, Ybarra and Mitchell (2004b) found greater instances of substance abuse and depression among both perpetrators and victims of cyberbullying, and Beran and Li (2007) found the outcomes of cyberbullying mirror those of traditional bullying, eliciting feelings of social anxiety and low self-esteem.

However, there is variance in the literature in terms of how cyberbullying is defined, and this has resulted in inconsistent reports of prevalence and correlates such as age, gender, and involvement in traditional bullying (Tokunaga, 2010). As stated earlier, what makes traditional bullying bullying is clearly defined: bullying refers to behavior carried out with intentionality to do harm within the context of an imbalance of power between bully and victim repeatedly and over time (Olweus, 1993). There is, however, great disagreement in regards to these criteria for cyberbullying (Tokunaga, 2010). For example, Hinduja and Patchin (2008) suggested that power imbalances and repetition are

integral parts of cyberbullying because of its potential anonymity and ubiquity. In fact, even the term “cyberbullying” is controversial; Dempsey et. al., (2011) suggest that cyber-fighting or cyber-conflict may be more appropriate names for the phenomenon because the number one predictor of cyberbullying is cybervictimization. The implication is that there is much retaliation among cyberbullies and cybervictims, which suggests the absence of a power imbalance. One purpose of this review is to explore how various researchers have defined cyberbullying, and see where their ideas converge and diverge.

The behaviors that researchers have included in cyberbullying’s content domain, and how a cyberbully or cybervictim should be identified as such, have also been the subjects of controversy (Tokunaga, 2010). It is likely that both of these factors are a source of inconsistency in regards to reports of cyberbullying prevalence and correlates.

In order to better conceptualize cyberbullying, it may be reasonable to explore traditional bullying’s conceptual evolution. Initial studies of traditional bullying concentrated mainly on overt forms – direct physical and verbal attacks (Rivers & Smith, 1994). Over time, traditional bullying has come to have been divided into three subtypes: Physical, direct-verbal, and relational bullying (Olweus, 1999). Crick and Grotpeter (1995) identified the concept of “relational aggression” which would be a term subsequently adopted into the bullying literature to describe similar phenomena. Relational aggression refers to behavior intended to harm a person’s peer relationships or reputation, and can include cruel gossip, rumor spreading, ignoring, and exclusion.

Crick and Grotpeter (1995) separated overt aggression, which was an umbrella term that contained physical violence, theft, vandalism, and direct verbal attacks, from relational aggression, and found that while boys are more likely to be overtly aggressive,

girls are equally, if not more, relationally aggressive than boys. Crick and Grotpeter (1996) reported additional evidence for differential gender involvement across type of behaviors through the exploration of within group differences among boys and girls. Boys, relative to themselves, were far more likely to engage in overt aggression than relational, and girls displayed an opposite pattern. When other researchers (Nansel, et. al., 2001; Olweus, 1999) would further separate overt aggression into physical and overt verbal bullying, they discovered that boys physically bullied far more than girls, though the discrepancy decreased in terms of overt verbal bullying.

Cyberbullying contains many behaviors analogous to those of traditional bullying (Willard, 2007). For example one can directly send a cruel cell phone text or email, which may be an electronic extension of direct verbal bullying. Also, whether by word of mouth or by CMC, spreading rumors or making fun of someone behind his or her back are similar behaviors. In terms of physical bullying, it is possible that picture bullying may be related (Law et. al., 2012; Menesini, Nocentini, & Calussi, 2011), because it involves the physical denigration of the victim.

Many researchers have taken a somewhat arbitrary approach in choosing what cyberbullying behaviors to include in their surveys (Tokunaga, 2010). It is well known among traditional bullying researchers that boys physically bully more, boys and girls verbally bully about the same, and girls relationally bully more often. Though Willard (2007) and Patchin and Hinduja (2006) hypothesized that cyberbullying is inherently relational in nature, and therefore would be more likely to involve female students, they discovered no gender differences. If cyberbullying is in any way an extension of traditional bullying, it would stand to reason that the genders would continue to be more

involved in their respective behaviors – boys would physically bully more, girls and boys would verbally bully the same, and girls would relationally bully more often.

Cyberbullying offers far less opportunity to physically bully. Because the genders are evenly matched across verbal bullying, and because girls tend to relationally bully more often, it is possible that depending on the items included in a study, the indicated involvement across the genders would vary considerably.

Furthermore, it has been the habit of many researchers to conduct logistic regressions when analyzing cyberbullying behavior, a procedure that polytomously classifies an individual as a bully, victim, bully-victim, or not involved (Bauman, 2010). While a study may include a broad sample of the cyberbullying content domain, if a respondent endorses any item to indicate involvement, he or she will be classified as a bully or victim, regardless of the nature of the item. This practice may have a normalizing effect across the genders – more boys may be endorsing certain items, and more girls may be endorsing others, but ultimately, no matter the pattern, the endorsement of any item will result in the respondent's inclusion in a broad category (bully, victim, bully-victim, or not involved). This practice may obscure true gender trends among different types of behaviors. As of writing this review, this possibility has not been addressed. Little attention has been given to the possibility that cyberbullying is not a global construct, but rather contains more than one dimension, similar to traditional bullying. As of yet, no researcher has attempted to apply the same methods of gathering evidence in regards to the underlying dimensionality of cyberbullying that have been for traditional bullying.

The overarching purpose of this review is to explore the history of how bullying has been defined in the extent literature, examine what evidence has been gathered regarding its structure and content domain, and then see what efforts have been made to do the same for cyberbullying. The present study will attempt to examine whether cyberbullying has an underlying dimensional structure, and then determine to what extent that structure may be interrelated to that of traditional bullying.

Literature Review

Defining Bullying: The Olweus definition

When discussing the measurement of any social phenomenon, it is first imperative for researchers to define what it is they wish to measure (Reynolds, Livingston, and Wilson, 2009). In so doing, they begin laying the foundation for the conceptual framework from which they may identify and operationalize quantifiable phenomena, as well as cultivate a common vocabulary for ease of communication among fellow researchers. In the case of school bullying and victimization, it is impossible to discuss the subject without first acknowledging the contributions of Dan Olweus and his Scandinavian studies of the early 1990s; his definition is still in wide acceptance today.

Olweus (1993, 1994, 1999) conducted several seminal research studies related to the definition, measurement, and prevalence of bullying and victimization among school aged children in Norway and Sweden. He sampled over 150,000 students in grades 1 through 9; Olweus' were the first studies in history to seriously examine bullying behaviors across a significantly large sample of young people. Results indicated that during a 3-5 month period, nine percent of the students had been bullied by another student several times or more, and that seven percent admitted they had bullied a student several times or more. Two percent were bully-victims; a subgroup among those involved in bullying who are bullied by some, but also victimize others.

According to Olweus' handbook *Bullying in the Schools: What it is and What to Do About It* (1993), bullying can be defined as, "repeated physical, verbal, or psychological attacks of intimidation directed against a victim who cannot properly defend him or herself because of size or strength, or because the victim is outnumbered,

or because he or she is less psychologically resilient.” Also included in Olweus’ initial discussion of bullying is the criteria that the bully must intend to do the victim harm, whether it be physical, psychological, or in regards to social relationships (Espelage, Holt, and Henkel, 2003; Olweus, 1993, 1994; Smith & Sharp, 1994; Whitney & Smith, 1993).

Farrington (1993), who conducted related research in the UK, found results that paralleled those of Olweus. He used a similar definition, and described bullying specifically in terms of an aggressor’s intention to do harm and the perceived power imbalance between bully and victim. He also included the criteria that for an aggressive act to be considered bullying, it must be *unprovoked*. This addition to the definition is controversial; many researchers have discussed bullying behaviors in regards to a specific sub-group of aggressive children called “bully-victims” who are bullied by some only to turn around and victimize others. Members of this subgroup seem to bully specifically *because* they are provoked (Rigby, 1993). There is considerable evidence that this is a distinct group among aggressive children characterized by its own particular set of aversive outcomes (Crick, 1996; Crick & Grotpeter, 1995; Rigby, 1993).

The Olweus definition has remained vital to the bullying literature from its first appearance to present day research (Espelage & Swearer 2003; Olweus 2001), though it often is re-interpreted with subtle variations. For example, in 1994 Rivers and Smith slightly modified the concept of a perceived power imbalance, describing it as a “systematic abuse of power” between bully and victim.

The three criteria of bullying behavior

Regardless of the researcher, the three criteria initially proposed by Olweus emerge in the extent literature as quintessential in separating bullying from all other forms of aggression, of which bullying is considered a specific sub-category (Nansel, 2001). These are: 1) the intention to do harm, 2) an imbalance of power, and 3) the act is carried out repeatedly over time (Espelage & Swearer 2003; Whitney & Smith, 1993).

The idea of an intention to do harm means specifically that bullying, by its nature, must be malicious (Rivers & Smith, 1994). The term “bullying” excludes such aggressive behavior as playful teasing, friendly rough housing, and fighting or bickering among equals (Espelage & Swearer, 2003; Olweus, Limber, & Mihilac, 1999).

The second criterion is that, in order for an aggressive behavior to be considered bullying, it must be perpetrated in a situation where there is a perception of a power imbalance between bullies and victims (Whitney & Smith, 1994). This concept has been elaborated within the literature to include a variety of situations which would lend themselves to power imbalances.

Chief among these is what may be the most obvious – that of one child being physically larger than the other (Olweus, 1993). In fact, power imbalance has often been operationalized as such. Many researchers in bullying have criticized Olweus for emphasizing differences in physical size to such an extent that it seemed he equated this with the concept of a power differential to the exclusion of other forms (e.g. Crick & Grotpeter 1995, 1996, Crick, 1996). Rivers and Smith (1994) leveled an additional criticism toward Olweus’ research. They commented that he under-addressed relational bullying by operationalizing it as “an individual being left alone at breaktime.”

Subsequent research would provide further needed elaboration on relational bullying (e.g. Crick & Grotepeter, 1995, Crick 1996).

There are several other sources of a power differential that researchers have identified in the literature. A difference in intelligence, particularly social intelligence or quickness of wit, is often used within this context (Rivers & Smith, 1994). The perception of popularity, or “coolness” is another. Often overlooked is the concept of several students mobbing another – there is no question that there is strength in numbers (Olweus, 1999).

The third criterion has two parts. The first is that the behavior must be carried out repeatedly – that is, bullying is not aggressive behavior that a victim only experiences once in a while, regardless of perpetrator intentionality or power advantage. The second part is the most often overlooked: bullying, by definition, must take place *over time*. This part of the criterion means that for a behavior to be considered bullying, it must happen not only frequently, but must happen frequently for a sustained period. According to a strict definition of bullying, the victim must endure harassment frequently *and* over a long period of time.

The definition of bullying as a subcategory of aggression is complex. Scheithauer, Hayer, Petermann, and Jugert, (2006) acknowledge that even a cursory examination of the extent literature reveals that when most researchers measure bullying, they rarely adhere strictly to the definition.

Types of bullying: Physical and verbal

The literature identifies three major sub categories of bullying: physical, verbal, and relational. The early studies by Olweus and colleagues focused mainly on the physical manifestation of bullying (Rivers & Smith, 1994; Scheithauer, et. al., 2006). Physical bullying involves physical attacks against a victim or his or her property. This includes punching, kicking, shoving, pushing, tripping, or other forms of physical abuse (Juvoven & Graham, 2001; Olweus, 1993 Pelligrini, 1998; Rigby, 1996; Smith, Cowie, Olafsson, & Liefoghe, 2002). This can also include humiliating a victim in public by doing something such as pulling his or her pants down, or by forcing him or her to do something he or she does not want to do (Rivers & Smith, 1994). Also included within the concept of physical bullying is either stealing, hiding, or vandalizing somebody's property (Nansel, 2001).

Verbal bullying generally refers to saying mean or rude things to someone in order to hurt his or her feelings (Farrington, 1993; Rivers & Smith, 1994). This has been operationalized a number of ways in the literature. For example, Patchin and Hinduja (2006) included survey questions that asked about "teasing in a cruel way", "disrespecting", and "calling mean names." Essentially, "verbal" bullying refers specifically to instances where the bully says something mean *directly* to the victim.

The third type of bullying: Relational

Parallel to Olweus' initial foray into exploring young peoples' bullying experiences, Lagerspertz, Bjorkvist, and Peltonen (1988), and subsequently Bjorkvist et. al. (1992), were making headway in regards to exploring what would be referred to as indirect, social, and relational forms of aggression. This research, which emerged from

the general aggression literature, would merge with that of bullying to form the backbone of quantitative evidence supporting a third distinct category of bullying.

The Crick and Grotpeter studies of the mid 1990s helped crystallize this concept with their discussion of *overt* vs. *relational* aggression. In Crick and Grotpeter's (1995) seminal research, they defined *relational* aggression as "exclusion, gossiping, and telling lies to harm others through purposeful manipulations intended to damage their peers' relationships." The defining characteristic of *relational* aggression is that its purpose is to damage a person's reputation or relationships with peers (Bjorkvist, 1994; Crick & Grotpeter, 1995; Galen & Underwood, 1997; Owens, Shute, & Slee 2000).

Rivers and Smith (1994) would separate *direct* and *indirect* forms of bullying in one of the first studies to address behaviors intended to damage peer relationships. They specified *direct* forms of bullying as including physical and verbal behaviors. In contrast, they described *indirect* bullying as involving the spreading of rumors, saying mean things behind somebody's back, and ignoring or excluding certain individuals from group activities in order to hurt the individual's feelings.

The term "indirect" bullying is ambiguous in that it does not specify into which category such behaviors as theft or vandalism belong. These are covert in the sense that they are rarely carried out in plain view of the intended victim (that is, directly). Because the term "indirect" bullying is ambiguous, for the remainder of this review I will use the term *relational aggression* or *bullying* for its clarity to refer to this category of behavior.

Bullying vs. aggression

When navigating the extent literature which defines overt and relational forms of *aggression*, one should remain conscious that the authors are exploring forms of general aggression *not limited* to examples of bullying (e.g. Bjorkvist, 1994; Crick and Grotpeter 1995; Crick 1996; Galen and Underwood, 1997). Many researchers (e.g. Rivers and Smith, 1994; Espelage & Swearer, 2003) define their categories of bullying using the aggression literature as a foundation because bullying and aggression are so closely related. One should remain aware, however, that bullying is a subcategory of aggression, and not a term that should be used interchangeably, as pointed out by Scheithauer and colleagues (2006). In my later sections discussing the definition of cyberbullying, I will show that many researchers have made particularly little effort to distinguish between aggression and bullying when examining aggressive acts carried out by CMC-based means.

Factor analysis and bullying/aggression types

Researchers have used factor analysis to explore the structure of aggression in regards to its subtypes. Prinstein, Boergers, and Vernberg (2001) developed an aggression scale that remains popular today because of its strong evidence in terms of structural validity. The Prinstein scale divided aggression into overt and relation subtypes, and produced excellent evidence of fit. Items from this scale have enjoyed wide acceptance and continue to be incorporated in recent factor analyses of bullying and aggression (i.e. Dempsey et. al. 2009; Blake et. al., 2011).

However, the Prinstein scale does not consider verbal aggression as a discrete type of aggression; it combines all forms of overt aggression into one category. It only

includes a single item to address verbal aggression: threatening. Additionally, it contains no items addressing rumor spreading or gossiping in its conceptualization of relational aggression. Instead, it focuses on forms of exclusion. Blake et. al. (2011) expanded the Prinstein scale and conducted a confirmatory factor analysis examining categories of aggression. They found very good evidence of fit $\chi^2(130) = 236.67$, CFI= .91, RMSEA =.06 However, Blake and colleagues focused on subtypes of relational aggression and examined only one overarching category for overt aggression. They only included the same single threatening item from the Prinstein scale to represent verbal aggression.

Dempsy et. al. (2009) also used items from the Prinstein scale, but limited their scope to overt, relational, and cyber aggression. They, like the other two studies, included only the threatening item to represent verbal aggression. In terms of factor analyses exploring aggression and bullying, surprising little attention has been given to verbal aggression as a separate category.

The Revised Olweus Bullying Questionnaire includes four verbal bullying items and has been used by several authors (i.e. Sheithauer et. al., 2006) to examine bullying subtypes. The most recent version of the Olweus scale was made available in 2007. However, the scale only contains two overarching factors: bullying and victimization. The scale includes nine specific subtypes of bullying, and does not include confirmatory factor analysis among its evidence regarding the psychometric validity of these subtypes (Olweus, 2007).

Gender differences regarding bullying sub-types

There is research outside of traditional factor analysis that suggests differences in bullying and aggression subtypes. Gender trends regarding involvement in certain styles of aggression have been used to discriminate between them. Evidence across studies and across time has shown that boys are more likely to both engage in, and be victim of, physical bullying and aggression (Bjorkvist, 1992; Lagerspertz, Bjorkvist, & Peltonen, 1988; Whitney & Smith, 1993).

There has been less consistent evidence displaying the relationship between gender and both verbal and relational bullying. For example, Bjorkvist et. al. (1992) showed that boys and girls are equally involved in verbal bullying, though girls tend to be more involved than boys in relational bullying. Rivers and Smith (1994), Baldry and Farrington (1999), and Dempsy, Sulkowski, Dempsy, and Storch (2011) all found similar results. However, both Putallaz et. al. (2007) and Whitney and Smith (1993) found that though girls are more likely to be relationally victimized, they found no evidence that indicated any gender differences in terms of the perpetration of relational bullying. There is also evidence that boys are more aggressive overall – some results indicate that boys are more likely to be involved in verbal bullying, and even relational bullying, when compared to girls (Underwood, 2003; Scheithauer, et. al. 2006; Wolke & Stanford, 1999). While there is consensus that boys more often engage in physical forms of bullying and aggression when compared to girls, the relationship between gender and the other forms of bullying is less clear.

The strongest piece of evidence involving gender that helps distinguish between relational bullying and the other categories is the comparison of the degree to which boys

and girls engage in overt and relationally aggressive behaviors *relative to themselves* (Galen & Underwood, 1997). According to Crick and Grotpeter (1995) boys are far more likely to engage in physical or verbal forms of aggression than they are relational, especially during the elementary school years. Conversely, girls are more likely to be involved in relational aggression as opposed to verbal or physical aggression or bullying (Crick & Grotpeter, 1995; Lagerspetz, Bjorkqvist, & Peltonen, 1988). Though there is some degree of variability as to whether or not girls are more involved in relational aggression when compared to boys, they are more likely to be involved in relational aggression than overt forms of aggression (Crick, Bigbee, & Howes, 1996; Crick & Grotpeter, 1995).

Age and bullying

Age patterns linked to the different bullying/aggression subtypes also indicate differences between them. Bjorkqvist (1992) discussed how the prevalence of physical bullying peaks at around age 11 and subsequently decreases, while relational bullying continues to increase through middle school, though levels off and eventually decreases throughout high school. Other studies have provided similar results, suggesting that bullying of all types peak in middle school, with physical bullying decreasing the most dramatically during the following years, and relational bullying tapering off the most slowly (Olweus, 1999; Rigby, 1996; Whitney & Smith, 1993). These trends in age patterns help to further distinguish subcategories of bullying and aggression.

The profiles of bullies

So far, I have explored the meaning of aggression and bullying in particular, as well as examined some of the evidence that researchers have used for discriminating between bullying and aggression subtypes. I have established that aggression refers to any behaviors intended to do another individual harm, and the term bullying refers to instances of aggression where, in addition to the desire to harm the individual, the perpetrator has some sort of power advantage over the victim (be it physical, intellectual, or social), and continues to harass the victim repeatedly over time. I have discussed the three types of bullying most commonly identified in the literature – physical, verbal, and relational - and elaborated on the behaviors associated with each of these categories. Also, I have examined the aggression literature that first explored the concept of relational forms aggression in detail, and how this line of research contributed to our current understanding of bullying behaviors.

At this point I will examine what kind of children bully, why they bully, and what kind of traits may make children more vulnerable to becoming victims. Olweus (1978) began to explore this issue. Previous to his research, many educators had assumed bullies to have low self esteems, and engaged in bullying as a method of bolstering self image (Olweus, 1978, 1993). Olweus found evidence quite to the contrary. He found that bullies tended to be confident, have lots of friends, and be at least moderately successful in school. Salmivalli, Kaukiainen, Lagerspetz, (2000) described bullies as usually being grandiose, lacking empathy, and be psychologically defensive. Limber (2002) found evidence indicating that bullies have positive attitudes toward violence. Bullies tend to be aggressive, destructive, and enjoy dominating other people; in other words, they are

antisocial. Olweus (1999) further elaborated on the traits of bullies, and described them as hot tempered, impulsive, and having a low tolerance for frustration.

Researchers are not in total agreement in regards to bullies' psychological profiles. For example, Dodge (1991) and McNamara and McNamara (1997) claimed that bullies interpret other peoples' actions as hostile even when they are not, and that bullies have difficulty navigating social situations. This profile is considerably different from Olweus' description of an individual who is confident, popular, and successful. It should be noted that Nansel and colleagues (2001) specified that while bullies often have many friends, they are only popular among certain groups of students. These types of youth, who are well liked by some but rejected by others have been referred to as "controversial" students in the literature that examine peer relationship through socio-metric methods (Xie, Cairns, & Cairns, 2011).

Further disagreement is displayed in Terranova and Boxer's 2008 study in which they found evidence that low *fear reactivity* is related to bullying. *Fear reactivity* refers to the extent to which an individual is affected by novel or threatening stimuli in the environment. The concept that bullies tend to not be affected by novel or threatening stimuli in the environment seems in contrast with the idea that bullies tend to read others' behaviors as aggressive when they are not. Regardless of these disagreements in the literature, it appears that all parties concur that bullies tend to lack empathy and see aggressive behaviors as appropriate ways to solve problems.

The profiles of victims

In contrast to bullies, victims tend to display low levels of confidence, present as socially introverted, and have low self esteem (Harris, Petrie, & Willoughby, 2002; Olweus, 1993). Additionally, they may be smaller or physically weaker than other students (Olweus, 1993). Students who present with internalizing problems such as depression or anxiety may attract bullies as well (Nansel, Haynie, & Simons-Morton, 2003; Hawker & Boutlon, 2000). Internalizing problems are often identified as victimization outcomes, and additionally, students who present with these profiles in the first place may be at a higher risk for peer victimization. This may lead to a vicious cycle in which students who present with internalizing problems attract bullies, experience an increase of internalizing problems, which in turn makes them more vulnerable to further bullying. Additionally, students who are prone to violent behavioral outbursts also may be more likely to be bullied (Nansel, Haynie, & Simmons-Morton, 2003).

Outcomes for bullies, victims, and bully-victims

Outcomes for bullies. The extent literature contains extensive evidence in regards to the unfortunate outcomes experienced by bullies, victims, and those who are involved in bullying as both bully and victim. Olweus (1999) found longitudinal evidence that students identified as bullies during childhood are far more likely to present with antisocial behaviors in adulthood. Magnusson, Stattin, and Duner (1983) and Loeber and Dishion (1984) also found evidence that delinquency, substance abuse, and crime are not only correlated with bullying behavior, but also persist into adulthood for those identified as bullies during childhood. Olweus found in his 1999 longitudinal study that as many as sixty percent of boys categorized as bullies while in grades 6 through 9 were eventually

incarcerated at least once in adulthood. Low school commitment, substance abuse, and low school achievement outcomes have also been associated with bullies (Nansel et. al., 2001).

Outcomes for victims. The negative outcomes for the victims of bullies are manifold. School refusal, somatic complaints, suicidality, depression, anxiety, eating disorders, and running away from home are all associated to a greater degree by those victimized by bullies than non involved peers (Borg, 1998; Espelage & Swearer, 2003; Katiiala-Heino et. al. 1999; Kochenderfer-Ladd & Skinner 2002; Nansel et. al., 2001; Striegel-Moore et. al., 2003). Olweus (1999) found longitudinal evidence that the depression experienced by the victims of bullying can persist into adulthood. Other longitudinal studies (Kim, Leventhal & Koh, 2006; Kumpulainen & Rasanen 2002) offer further evidence that the victims of bullies suffer from psychiatric problems with greater severity than their peers.

Many researchers examining the aversive outcomes of bullying have criticized the literature for focusing too heavily on the outcomes of overt bullying. There is considerable evidence that the experience of peer rejection alone has an equally powerful impact on its victims, (Grills & Ollendick, 2002; O'Moore & Kirkham 2001) resulting in depression (Smart & Walsh, 1993) substance abuse (Hull, 1981), and aggression (Coie & Dodge, 1988).

Outcomes for bully-victims. Bully-victims may experience the most aversive outcomes when compared to those who are involved as either the bully or the victim only (Austin & Joseph, 1996; Haynie et. al. 2001; Katiiala-Heino et. al. 2000; Nansel et. al. 2001; Olweus, 1993; Olweus, 1994). There is evidence that this group has many

outcomes in common with bullies, such as low school commitment, substance abuse, and low academic achievement. However, they also present with symptoms of loneliness and poor relationships with peers (Nansel et. al., 2001). It is possible that the presence of bully-victims is the reason why there exists conflicting evidence related to bully profiles; if a study does not distinguish between “pure” bullies and those involved as both bully and victim, it is possible that the bullies in that study may appear to have poorer academic achievement and social skills.

Bully-victims present with depression (Kaltia-Heino et. al., 1999) anhedonia (Kumpalainen et. al., 1998), somatic symptoms (Ferrero et. al., 1999) and other psychological disorders, as well as higher rates of psychiatric referrals compared to pure bullies, pure victims, and non-involved peers (Kumpalainen et. al., 1998). Bully-victims, as a group, continue to attract the attention of school personnel and researchers alike because of the particularly severe outcomes associated with them.

Bullying outcomes and bullying subtypes

I have examined the outcomes associated with involvement in bullying. These outcomes not only serve as evidence in terms of the necessity for bullying intervention, but also function as evidence that we may discriminate between the subtypes.

The behaviors classified as relational bullying have outcomes distinct from those of the other types of bullying, further distinguishing relational bullying as a valid subcategory of the broader construct of bullying. For example, Van Der Wal et. al. (2003) found that relational victimization is more associated with suicidality and suicide ideation than other types. This is particularly true for relational bully-victims who have been found to be the most socially isolated group among all students (Grotperter & Crick, 1996;

Coie & Dodge, 1988). This is not surprising considering that peer rejection has been associated with severe adjustment difficulties.

Another source of discriminant evidence with regards to the validity of the relational bullying subcategory comes from the aggression literature. Crick and Grotpeter (1996) found that among girls, overt aggression and both overt and relational victimization are associated with the various negative outcomes we have just discussed. However, relational aggression was not associated with any negative outcomes for perpetrators. This evidence of divergent outcomes among girls further supports the argument that the nature of relational aggression is different from overt aggression.

Summary of the literature on bullying

From the extant literature on bullying, a number of themes emerge. First and foremost: bullying is widespread and associated with a multitude of negative outcomes for all parties involved, and longitudinal evidence suggests that bullying is not only correlated with these outcomes, but is part of the cause. Bullies tend to be narcissistic, grandiose, have problems in regards to judgment and impulsivity, lack empathy, and believe violence to be an appropriate solution to social conflict. Victims tend to be introverted, physically weaker than their peers, and prone to internalizing problems.

Aggression is a term that describes any behavior intended to do harm to another (Coie & Dodge, 1988), and bullying is a specific subtype of aggression that is distinguishable in that it is not only intended to do harm, but also involves a perceived power imbalance between perpetrator and victim, must be done repeatedly, and must be carried out over time. Many circumstances may lend themselves to power imbalances,

including differences in physical size, intelligence, popularity, and the many ganging up on the few.

There is evidence to suggest that there are three categories that comprise the broader construct of bullying, which are generally referred to as physical, verbal, and relational bullying. Physical and verbal bullying involve overt, direct attacks against a person or his or her property, and relational bullying seeks to damage a person's reputation or relationships with peers. Factor analysis, and in particular trends among gender, age, and outcomes serve as evidence that we may discriminate between the categories of physical, verbal, and relational bullying.

Defining cyberbullying

I have explored how the literature defines traditional bullying; now I will explore the terrain of cyberbullying. The following sections will first review how cyberbullying has generally been defined in the literature, while giving particular attention to ways in which the conceptualization of traditional bullying and cyberbullying both overlap and diverge. I will discuss in detail features unique to cyberbullying related to the various CMC media through which it is perpetrated. For example, the anonymity provided by CMC is associated with a sense of deindividuation (Suler, 2004). Kowalski and Limber (2007) hypothesized that certain individuals who would have otherwise never engaged in bullying behavior may suddenly reveal an aggressive side. Also, I will explore evidence that may contraindicate the salience of some of these features that supposedly make cyberbullying unique.

In general, cyberbullying refers to any intentional acts carried out by individuals using the medium of CMC to harm another individual or damage someone's reputation

(Willard, 2007; Li, 2006; Patchin & Hinduja, 2006). The first authors to define cyberbullying were Ybarra and Mitchell in 2004. They referred to cyberbullying as “an intentional and overt act of aggression toward somebody online”. Mitchell and Ybarra were the first great pioneers in the field of cyberbullying research. Their early conceptualization is rather narrow. They provide only a limited scope of cyberbullying behaviors, ignoring the possibility of bullying via cell phones, and also ignoring what would eventually become the central focus of cyberbullying research – that is, relational types of cyberbullying (Willard, 2007). These criticism also apply to Li (2006, 2008) in her early explorations into the phenomenon of cyberbullying and cybervictimization. These first examinations of cyberbullying (similar to the early studies of traditional bullying) tended to focus on the overt attacks perpetrated against the victim directly in a limited variety of online contexts.

Researchers have since greatly expanded their conceptualization of cyberbullying, both by considering indirect attacks against victims, and by giving particular attention to the wide variety of electronic media through which bullies can perpetrate. Mason (2008) provided the following definition for cyberbullying: “*Cyberbullying* is defined as an individual or a group willfully using information and communication involving electronic technologies to facilitate deliberate and repeated harassment or threat to another individual or group by sending or posting cruel text and/or graphics using technological means.” Mason’s definition has a much broader scope, no longer limited to only aggressive actions involving electronic texts, but also with graphics. Additionally, she chose to include the word “posting” in the definition, acknowledging that cyberbullying is not simply a term that describes direct attacks against a victim, but rather includes

instances of cruel words or images posted online for many see. This more inclusive conceptualization has become widely accepted in current research (Calvette et. al., 2010; Ybarra et. al., 2012).

The content domain of cyberbullying

Willard (2007) and Patchin and Hinduja (2006) and would identify several types of cyberbullying: flaming, cyberstalking, harassment, denigration, masquerading, outing, and exclusion. Flaming refers to sending cruel emails or texts to a victim, cyberstalking is the practice of threatening or intimidating a victim through CMC, and denigration is the act of posting cruel texts, images, or video clips to websites or otherwise spreading this information around in an attempt to damage the reputation of the target. Harassment is simply defined as the repeated sending of cruel messages or images to the target – essentially, it is the act of repeated flaming. Masquerading is a term that describes impersonating a different individual while online in order to make that person look bad to others. Outing is the sending around of sensitive information about a person that was given in confidence, and exclusion is the act of denying a person access to online groups. Overall, these categories do well to span the scope of cyberbullying's content domain.

Burgess-Proctor, Patchin, & Hinduja (2008) identified an additional method: attempts to actually damage somebody's computer by way of computer viruses or by "bombing" an individual's email account. Hinduja and Patchin (2008) explain that "bombing" is the practice of an aggressor attacking a person's personal email account by setting up his or her own email account that will automatically send thousands of meaningless emails to the victim every day, until the victim's server becomes overloaded and is effectively destroyed.

Though Hinduja and Patchin claim this type bullying has no equivalent in traditional bullying, one could make the argument that this type behavior is analogous to vandalism. Additionally, it is important to point out a particular kind of cyberbullying that involves picture images or video clips called “happy slapping.” Happy slapping refers to the practice of a bully doing something physically humiliating to an individual (tripping the individual, pulling his or her pants down) and having an accomplice take a picture of the event or record it with a cell phone camera. The bully and his or her accomplice then post the image or video to the Internet or distribute it to other students by sending it as a cell phone text message attachment (Dooley, Pyzalski, & Cross, 2009; Spears, Postmes, Lea, & Wolbert, 2002).

Modalities of cyberbullying

Methods of cyberbullying have also been identified in terms of their CMC modalities. Smith, Mahdavi, Carvalho, and Tippett (2008) conducted a study of London students and classified cyberbullying behaviors based on the modality of perpetration – their seven categories were comprised of bullying carried out via text messaging, picture or video clip, phone calls, emails, chat rooms, instant messenger, and personal websites. Juvonen and Gross (2008) also discussed these various modalities, stressing harassment carried out in chatrooms and instant messenger. Strom and Strom (2005) defined cyberbullying in similar terms, describing it as harassment involving using an electronic medium to threaten or harm others. They included email, chat rooms, cell phones, instant messaging, pagers, text messaging, and online voting booths as tools used to inflict humiliation, fear, and a sense of helplessness on victims.

Features unique to cyberbullying

Slonje and Smith (2008) identified what would become commonly accepted as features particular to cyberbullying that differ from that of traditional. The first of these features is anonymity – one who is behind a computer screen becomes potentially unidentifiable. A second, related feature is that the perpetrator is unable to observe the reactions of the victim, which may limit his or her ability to have an empathetic response (Kenneth & Bargh, 2000). The third unique feature of cyberbullying is that a perpetrator gains a potentially infinite audience to displays his or her dominance over the victim. Once information is posted to the Internet it has the potential to be viewed limitless times by any number of people (Kowalski, Limber, &, Agatston, 2008; Li, 2005). The fourth key feature is that because cyberbullying is carried out by way of CMC, it alters the time and space constraints of traditional bullying (Dehue, Bolman, & Vollink, 2008). Traditional bullying mostly takes place at school – cyberbullying on the other hand can follow a victim home, thus making its harmful effects inescapable. We will explore these features in greater depth in the next three sections.

Anonymity and de-individuation. The potential anonymity garnered by CMC is a popular topic for researchers in cyberbullying. Many authors have postulated that people online will behave differently than they would face to face (Li, 2007; Hinduja & Patchin, 2008). Suler (2004) discussed the potential for CMC to unleash people's antisocial impulses because anonymity may lead to an experience of de-individuation. The theory of de-individuation has a rich history in social psychology; first introduced by Zimbardo in 1970, de-individuation describes the feeling of a loss of attachment to one's identity and therefore responsibility for one's actions. Put simply, if one is anonymous he

or she may be more likely to do something he or she wouldn't were his or her identity known (Kielser, Siegel, & McGuire 1984; McKenna & Bargh 2000; Postmes, Spears, & Lea, 1998).

Conversely, cyberbullying may lead the bully to dehumanize the victim because he or she cannot see the victim (Spears et. al., 2002). Specifically, the bully will be unable to see the victim's reaction to the aggressive behavior (or even see that the victim is really a person), and this may amplify the bully's narcissistic tendencies (McKenna & Bargh, 2000). Slonje, Smith, and Frisen (2012) contributed evidence in regards to this when they performed a study comparing the remorse felt by cyberbullies to traditional bullies and discovered that students felt more remorse when traditionally bullying than cyberbullying. The combination of the de-individuation experienced by the cyberbully and the cyberbully's dehumanized perception of the victim may lead certain individuals to commit serious social infractions.

Contraindication: Cyberbullying is often not anonymous. It may seem natural that someone using CMC to attack another individual would want to keep his or her identity hidden, and indeed, many researchers have assumed this. An individual can easily create any number of alternate email accounts and screen names for him or herself, thus concealing his or her identity when using CMC (Li, 2007). However, several studies have revealed that this is not necessarily the case; despite the fact that many researchers in the cyberbullying literature persist in the notion that cyberbullying is carried out anonymously, many aggressive online acts are *not* anonymous. For example, Huang and Cho (2010) found that among those who were bullied in their study, only 25.1 percent didn't know the identity of the bully. Likewise, in a study carried out by Dehue, Bolman,

and Vollink (2008) only 34.8 percent of victims reported that their bullies were anonymous. Kowalski and Limber (2007), and Wolak, Mitchell, & Finkelhor (2007) found that as many as 50 percent of cybervictims knew the identity of the cyberbully. While many assume cyberbullying is anonymous, this is clearly not always the case. In this way, cyberbullying may, in effect, be more similar to traditional bullying than some initially assumed.

The ubiquity of cyberbullying. Another feature of cyberbullying is the potential for a single act of cyberbullying to spread throughout a community of peers. Not only is cruel material once posted online available to a nearly limitless audience, the website address may be forwarded to other potential bystanders countless times, (Li, 2007). Or, it is possible that others may copy the material from the original website and spread it independently from the initial bully (Dehue, Bolman, & Vollink 2008). Once a piece of information is posted on the Internet it is nigh impossible to remove, and, even if one does manage this, it will be even more difficult to track down and erase every copy of it (Li, 2007).

In addition to the nature in which unflattering information, images, or videos spread, the experience of being cyberbullied can follow a victim home (Dehue, Bolman, & Vollink, 2008). Home was once often considered a safety zone for a person harassed by bullies. However, because cyberbullying can follow someone wherever he or she accesses the Internet or uses his or her cell phone, cyberbullying may seem inescapable.

Severe consequences of ubiquity. The phenomenon of cruel videos spreading throughout a peer group by way of CMC has been associated with the most serious incidents of cyberbullying, and, in some cases, has led to suicide. For example, in Japan,

an overweight child had his photograph secretly taken while he was changing (Strom & Strom, 2005). Soon, the image had spread all over the community. The boy committed suicide. Another boy in Quebec was reenacting a scene from Star Wars in his garage. A video of this was made and secretly uploaded onto the Internet. The video became so popular that it even appeared on a news program – the child was labeled “the Star Wars Kid.” In an interview, he said that he felt humiliated and wondered if he would ever be able to regain his dignity (Taylor, 2013). The most infamous example was the incident at Rutgers University, where a homosexual student was secretly recorded engaging in intercourse by his roommate (Hudson, 2010). The roommate distributed the video on the Internet. The victim committed suicide. Though these are only examples of isolated incidents, it is clear that the ubiquitous nature of CMC has the potential to increase the psychological impact on a victim considerably.

Defining cyberbullying and the criteria of traditional bullying

The severe consequences of cyberbullying certainly deserve the attention of schools and researchers. However, in order to properly conduct research regarding a phenomenon, it must be conceptualized with consistency. Many researchers have commented on the lack of an agreed upon, standard definition of cyberbullying. For example, Kiriakidis and Kavoura (2010), and David-Ferdon and Hertz (2007) commented that the lack of a common definition has created confusion when comparing studies.

In my discussion of how various researchers have defined cyberbullying, the criteria that separate cyberbullying from what one might call “cyber-aggression” are conspicuously absent. Law et. al. (2012), and Tokunaga (2010) address this point: researchers of cyberbullying have not consistently applied the criteria of an imbalance of

power and repeated perpetration over time to their definitions of cyberbullying. In this section I will discuss how certain authors have attempted to address the traditional bullying criteria within the context of cyberbullying.

Imbalance of power and cyberbullying. One of the defining features that distinguishes bullying from the broader category of aggression is that bullying involves a power imbalance between perpetrator and victim. A considerable number of the studies on cyberbullying have completely omitted this requirement (Aricak et. al. 2008; Sourander et. al. 2010). None of the definitions provided by Willard (2007), Li (2006), Patchin and Hinduja (2006), or Ybarra and Mitchell (2004a; 2004b), which have greatly shaped the research in cyberbullying, provided the specific criteria that in order for a behavior to be considered cyberbullying, it must be done within a context in which there is a perceived imbalance of power. The following sub-sections describe what certain authors have equated to an imbalance of power for cyberbullying.

Anonymity. One popular notion is that the anonymity granted by CMC equates to an imbalance of power, because the victim cannot easily defend him or herself from an anonymous person (Schenk & Fremouw, 2012; Vandebosch & Van Cleemput, 2008; Ybarra & Mitchell, 2004b). Pearce, Cross, Monks, Waters, and Falconer (2011) also claimed that a power imbalance is inherent to cyberbullying because victims cannot easily retaliate against an unknown offender.

While it may be the case that one cannot easily defend him or herself against an anonymous bully, the degree to which cyberbullying is perpetrated anonymously is questionable (Huang & Chou, 2010; Dehue, et. al., 2008). One cannot assume that cyber-based aggression is anonymous and therefore includes a power imbalance.

CMC ability. Other authors have suggested that expertise in CMC gives the bully his or her power (Patchin & Hinduja 2006). However, CMC skill has only been operationalized in one of three ways: amount of time a person spends using CMC (Vandebosch & Van Cleemput, 2009), number of different CMC modalities in which an individual engages (Hinduja & Patchin, 2008), and how a person rates him or herself subjectively on an item directly inquiring about a person's degree of perceived proficiency using CMC (Li, 2008).

All three of these operationalizations of "computer skill" are problematic. First, while time spent using CMC or the number CMC modalities used have been found to be related to cyberbullying perpetration (Smith et. al, 2008), and especially connected to victimization, operationalizing "computer skill" in this way conflates skill with use. Additionally, one's own opinion of computer expertise is highly subjective – while Li (2008) did find that cyberbullies tend to rate themselves as having a high level of CMC expertise, there may be an alternate interpretation: bullies are narcissistic, so they would naturally have a high opinion of their ability. Overall, there has been little evidence to support the theory that computer expertise is something that can be objectively measured to indicate a power imbalance.

Ubiquity. Li (2007) made the argument that an imbalance of power is inherent to the act of posting cruel information online. She explained that the potential audience to cruel online posts is near boundless, that electronic information spreads very rapidly once posted online, and that once it has spread, it is very difficult to eliminate. Li observed that one cannot easily defend him or herself against damaging information that has spread

throughout an entire community. This type of cyberbullying has indeed resulted in some of the most severe outcomes (Taylor, 2011).

Repetition over time. Another feature researchers have used to discriminate between general aggression and bullying is that bullying takes place repeatedly and over time (Rivers & Smith, 1994). Like the criterion of power imbalance, some authors have essentially ignored or taken a very liberal approach to this criterion for cyberbullying. For example, Slonje and Smith (2008) considered anyone who had perpetrated a single act of CMC-based aggression a cyberbully. Erdur-Baker (2010) considered anyone to have endorsed an item on their survey indicating that they had bullied “2 or more times” to have sufficiently met repetition requirement.

Other authors have taken a more rigorous approach in determining which cyber aggressors meet the repetition requirement. Bauman (2010) converted her participants’ responses that measured the number of times they perpetrated acts of cyberbullying into z scores, and then considered all individuals who had perpetrated at a level one standard deviation above the mean to have met the repetition criterion. Juvoven and Gross (2008) required that a participant at least indicate that they had cyberbullied someone seven times to be considered a true cyberbully.

In specific regards to the act of creating cruel online posts, several authors have suggested that this type of cyber-aggression can be considered to have met the repetition requirement (Ybarra et. al., 2012; Vandebosch & Van Cleemput, 2009; Slonje & Smith, 2008). As Li (2007) discussed, hurtful online posts spread rapidly and are seen by many people. Yilmaz (2011) found that as many as 47.5 percent have been exposed to this kind of material online.

Summary of issues concerning the criteria

The collection of issues presented in these passages illustrate that researchers in cyberbullying have inconsistently addressed the criteria that separate cyberbullying from what may be better described as mere cyber-aggression. Both the presence of a power imbalance and the concept of repetition over time have been operationalized in vague terms for cyberbullying (Klomek, Sourander, & Gould; 2010 Tokunaga, 2010). Researchers must either agree that the presence of a clear power imbalance is not necessary to identify a behavior as cyberbullying, or must change their term for describing aggressive behavior carried out by way of CMC (Law et. al., 2012, Wolak et. al., 2007).

Measurement of cyberbullying: Methodological inconsistencies

A review of the extent literature on cyberbullying reveals inconsistent, often conflicting, results across studies (Tokunaga, 2010). Every variable researchers have addressed in relation to cyberbullying (prevalence, gender, age, involvement in CMC, and involvement in traditional bullying behavior) has varied from study to study (Kowalski, Agatson, & Limber, 2008). For example, Kraft (2006) pointed out that depending on the report, student involvement in cyberbullying has been estimated anywhere from 6 to 40 percent. Patchin and Hinduja (2006) found no age or gender differences in terms of cyberbullying involvement, but Li (2006) found that boys are more often cyberbullies, and Wang, Ionatti and Nansel (2009) found girls more likely to be cybervictims. Kowalski and Limber (2005) found girls to be more involved in cyberbullying as both perpetrator and victim. The relationship to age has also varied from study to study (Menesini, Nocentini, & Calussi, 2011).

Variability in terms of cyberbullying's definition may partially explain this inconsistency. As I just discussed, varying stringency regarding the criteria used to classify an individual as a cyberbully may greatly influence reported rates of prevalence (Ybarra & Mitchell, 2012; Tokunaga, 2010; Gradinger et. al., 2009). Another methodological difference that appears to have had great impact on results has been the way in which questionnaire authors have framed their items regarding cyberbullying. In the following sections, I will first address the different ways in which researchers have framed their items, and then explain in detail the variety of methods used to classify whether a person is a cyberbully.

Framing cyberbullying questionnaire items

Researchers who have attempted to measure cyberbullying by way of questionnaire usually follow one of three methods to frame their items (Ybarra et. al., 2012). The way in which items in a questionnaire are framed can potentially greatly influence the manner in which respondents choose to answer. The next subsections will address these methods.

The definitional approach with simple yes/no items. Researchers (i.e. Patchin & Hinduja, 2010) present students with a definition of bullying prior to the presentation of questionnaire items. Sometimes, the definition is read aloud to students while they read along, to better ensure comprehension of the written definition (Li, 2008). After reading the definition, the students proceed to answer survey items.

One type of questionnaire contains simple yes/no items regarding broad categories of behavior: "Have you been bullied/cyberbullied? Has someone bullied/cyberbullied you?" (i.e. Li, 2006; Ybarra & Mitchell, 2004b). In instances of this

simplistic approach, the authors usually include within the definition various examples of possible bullying behaviors (physical, verbal, relational, or cyber) to make clear to the respondent exactly what kinds of things people can do to bully each other.

The definitional approach with specific items. Other authors have used a more complex survey design technique: they will first present the definition, and then follow it up with several questions, each asking about a separate, specific bullying behavior (has anyone ever *bullied* you by calling you mean names? Has anyone ever *bullied* you by punching, kicking or shoving you? Has anyone ever *bullied* you by sending you mean or cruel text messages?) (i.e. Hinduja & Patchin, 2008). Items in these questionnaires may either be dichotomous or polytomous.

The behavioral approach. In questionnaires designed using the behavioral approach, items ask students directly about their behavior without first defining bullying. When using this approach, authors will refrain from the use of the word *bullying* in their survey (Ybarra, et. al., 2012). Instead, the behavioral criteria for bullying are integrated within the items' phrasing. For example, a question might ask, "Have you ever said something mean to someone to hurt his or her feelings?" or "Have you ever said cruel things behind someone's back so people wouldn't like him or her?" This type of question often includes a 1-5 verbal anchor that allows the respondent to endorse his or her frequency of bullying, thus answering the question whether the behavior was carried out repeatedly. However, some authors (i.e. Erdur-Baker, 2010) classify a person as having met the criteria for bullying if they simply admit to bullying at least twice.

There are a number of advantages to this approach. Foremost among these is that by avoiding the word *bullying*, respondents are more likely to honestly report their

behavior (Vaillancourt, et. al., 2008). Ybarra and Mitchell (2012), in a systematic comparison of these various survey construction methods, found that the method that avoided using the word “bully” generated the highest reports of prevalence. However, Ybarra and Mitchell, in the same article, suggested an alternate explanation: this type of questionnaire is measuring *aggression* and not *bullying*.

Classifying cyberbullies

I have provided examples of how the manner in which researchers frame questionnaire items may influence the way in which respondents answer. Ybarra et. al. (2012) found that the behavioral approach to questionnaire design is associated with higher reported rates of prevalence. A second major methodological difference between studies addressing cyberbullying is the manner in which researchers classify cyberbullies as such. I discussed earlier that authors have often ignored or taken a very lenient approach to applying the traditional bullying criteria to cyberbullying when measuring the phenomenon. This issue is germane to the discussion contained in the following subsections, in which I will describe how authors have identified individuals as cyberbullies.

Some authors have chosen to classify individuals dichotomously (bully or not bully), while others have measured the degree to which an individual is a bully. Grading et. al. (2009) suggested that this methodological difference is the greatest source of inconsistency across cyberbullying studies.

Dichotomous classifications. Some authors have simply classified individuals as a bully or not. For example Li (2006, 2008) directly asked respondents if they had or hadn’t bullied someone using the Internet. Mitchell and Ybarra (2004a, 2004b) directly

asked respondents if they had done mean things to someone using the Internet. Topcu and Erdur-Baker (2008) used 16 items that addressed several forms of cyberbullying, and also allowed students to endorse items on a 1-5 scale. However, they classified anyone who endorsed an item with a response of 2 or more (indicating at least two acts of cyberbullying) as a cyberbully. This method of classifying bullies is relatively common (e.g. Calvete et. al., 2010; Sourander et. al., 2010; Patchin & Hinduja, 2006). Such an approach casts a very wide net and yields high rates of prevalence (Tokunaga, 2010).

Criticism. Several authors have criticized the dichotomous method because it is considerably reductive. (Shenck & Fremouw, 2012; Tokunaga, 2010; Gradinger et. al., 2009; Menesini & Nocentini, 2009). Additionally, critics have expressed that this method makes no effort to apply the traditional bullying criteria to cyberbullying, and also ignores any distinction between the severity of bullies. In specific regards to the earlier studies conducted by Li and Ybarra et. al., which included only a handful of yes/no questions, critics have commented that this method presented an under-representation of cyberbullying's content domain (Schenk & Fremouw, 2012; Wolke, Woods, & Samara, 2009). Smith, et., al. (2008) commented that there exists a trend in the literature to treat cyberbullying as a global phenomenon, ignoring the fact that there may be an underlining dimensionality to cyberbullying.

Polytomous classifications of cyberbullying behavior. Some researchers have made an effort to move beyond the dichotomous method of classification and instead have either chosen to separate those involved in cyberbullying into groups based on the severity of their bullying behavior (Wade & Beran, 2010) or have attempted to conceptualize cyberbullying as a continuous variable. For example, Dempsy, et. al.

(2009) summed all cyberbullying behaviors together to create a score with sufficient variance to be treated as a continuous variable. The problem with this method is that it presupposes that cyberbullying is a unidimensional construct (Smith et. al., 2008). While there has been convincing factor analytic evidence in support of this hypothesis (Dempsey et. al., 2011; Dempsey et. al., 2009), Law et. al., (2012) commented that there has been little, if any, effort to explore the dimensionality of cyberbullying.

Questionnaire items and the multi-dimensionality of cyberbullying

In addition to the way authors have framed their items and classified cyberbullies, the specific items researchers have chosen to include in their questionnaires has been highly inconsistent (Tokunaga, 2010). The items a scale developer chooses to include in his or her questionnaire may greatly affect patterns of response. Earlier in this review I discussed how boys and girls are more likely to engage in different bullying and aggression behaviors. In the case of cyberbullying, the types of items used may result in different reported rates of prevalence among genders. For example, a questionnaire that only includes overt cyberbullying items may cause boys to appear more likely to cyberbully than girls (Wolke et. al., 2009). Ybarra and Mitchell (2004b), in one of their earliest studies, asked only about “saying mean things to somebody” online. In other words, they only included direct cyberbullying items.

Conversely, some questionnaires have included a disproportionate number of items addressing relational forms of aggression, such as rumor spreading or gossip (i.e. Law et. al., 2012; Dempsey, et. al., 2009). Willard (2007) defined cyberbullying as an electronic form of relational bullying, and this conceptualization has been reflected in many researchers approach to item selection. Selecting only “relational” items may result

in higher prevalence rates for girls, as past reports (i.e. Crick & Grotpeter, 1996) have indicated that girls are more likely to engage in traditional versions of relational bullying (Wolke et. al., 2009).

Cyberbullying may be better conceptualized as having more than one dimension, similar to traditional bullying. Evidence for the dimensionality of traditional bullying and aggression has often used gender trends among bullying behaviors to help distinguish among its categories (i.e physical, verbal, and relational). The next sections explore the relationship between gender, age, and cyberbullying. This discussion will help guide us in determining whether cyberbullying has a multi-dimensional underlying structure.

Gender and cyberbullying

Researchers initially hypothesized that girls would be more involved in cyberbullying, because it appears to be closely related to relational bullying (Kowalski et. al., 2008; Willard, 2007). Additionally, girls have been reported to more frequently use CMC (Patchin & Hinduja, 2006). However, in many cases this hypothesis turned out to be inaccurate – little to no gender difference was found across many cyberbullying studies (Tokunaga, 2010; Erdur-Baker, & Capa-Aydin, 2009; Patchin & Hinduja, 2006).

In contrast, several studies did reveal gender differences, though the patterns of the differences varied considerably from study to study. In some reports, girls cyberbullied more (Smith et. al., 2008), while in others, boys cyberbullied more (Huang & Chou, 2010). In other studies boys cyberbullied more, and girls were more often victims (Slonje & Smith, 2008).

In the previous sections, I explored how different methods of framing items, classifying cyberbullies, and selecting items to include within questionnaires may have

affected rates of prevalence. In the next sub-sections I will focus in detail on the items used across questionnaires.

Item selection's impact on prevalence among genders. The extant literature contains a great deal of evidence pertaining to what types of bullying or aggressive behaviors are more likely perpetrated by each gender – boys tend to be more involved in physical and verbal bullying, and girls may be more involved in relational bullying. It is possible that a study which includes more “overt” type cyberbullying items may yield results of higher male involvement, while studies that include more “relational” examples of cyberbullying behavior may display an opposite pattern. A study which dichotomously classifies one a cyberbully who indicates involvement in any behavior, be it overt or relational, may mask gender difference (Slonje, Smith, & Frisen, 2012).

Overt cyber-items. Some questionnaires have included only overt cyber-items. Huang and Chou (2010) conducted a study in which they asked only about sending threatening, harassing, or mean emails and texts. Boys were significantly found to be both more likely to be cyberbullies and cybervictims. This study did not include any items of relational bullying behaviors such as rumor spreading or exclusion – the clear focus was on overt bullying behaviors and boys were found to be more involved.

Grading, Strohmeier, and Spiel (2009) also conducted an analysis of various types of bullying behavior. The scale contained only one item that addressed cyberbullying, which asked the respondent if he or she had ever said rude things to people via CMC (they described the modalities). This is a distinctly overt type of cyberbullying. They conducted a configural analysis that examined “types” and “antitypes”. In this study, a “type” was a pattern of behavior that appeared more often

than it should have by random chance. Grading et. al. found that for boys, traditional bullying and cyberbullying (represented by the one item) coincided more often than they should have by random chance. The overall results indicated a higher involvement for boys in both traditional bullying and cyberbullying, as represented by a single overt item. Additionally, they concluded that boys who say rude things to others face-to-face also were more likely to say rude things online.

Relational cyber-items. Sourander et. al. (2010) conducted a study that examined male and female involvement across items representing different types of cyberbullying behavior. They found boys more involved in direct threatening and girls more involved in rumor spreading and exclusion behaviors. Calvete et. al. (2010) also conducted a study that examined different types of cyberbullying behaviors. They discovered that a disproportionate number of boys used recorded images of physical aggression to bully their victims – the dissemination of such images may be analogous to the act of publically embarrassing the victim in a traditional manner. Again, the results of these studies suggest that boys are more involved in direct cyberbullying behaviors, while girls may engage more often in relational type behaviors.

Age and cyberbullying

The literature shows that traditional bullying peaks in middle school and steadily declines throughout high school (Bosworth, Espelage, & Simon, 1999). This phenomenon has often been attributed to the rapid social changes experienced when children enter adolescence. (Bosworth, Espelage, & Simon 1999). Williams and Guerra (2007), who examined cyberbullying rates among 5th, 8th, and 11th graders found results indicating that cyberbullying follows a pattern similar to traditional bullying – the 8th

graders in their study bullied the most, 5th graders the second most and the 11th graders the least. Kowalski and Limber (2007) and Mitchell and Ybarra (2006) found that cyberbullying increased between the ages of 10 to 15. Wang, Ionati, and Nansel (2009) found similar results. Tokunaga (2010) described a curvilinear relationship between cyberbullying and age.

Summary of issues inherent to past cyberbullying research

I have so far discussed the definition of cyberbullying and the ways in which people engage in cyberbullying. I also explored various methodological inconsistencies across studies, namely the way scale developers have framed their items, and the way researchers have classified cyberbullies. Through these discussions, I demonstrated that authors have rarely adhered to a conceptualization of cyberbullying that includes the features that distinguish bullying from aggression. Additionally, I discussed how the selection of certain items to represent cyberbullying's content domain may lead to differences in reported gender involvement. The fact that boys favor direct cyberbullying and girls more frequently engage in relational cyberbullying suggests that cyberbullying may follow a pattern analogous to traditional bullying. My overall discussion has acknowledged the criticisms discussed by other authors (i.e. Law et. a., 2012; Tokunaga, 2010) that variations in methodology have created considerably inconsistent results across cyberbullying studies.

Cyber-aggression: A more accurate term

Cyber-aggression may be a more accurate term to describe what has commonly been referred to as "cyberbullying." Tokunaga (2010), and Wolak, Mitchell, and Finkelhor (2007) have both expressed that no study attempting to measure cyberbullying

has properly accounted for a power-imbalance or repetition over time with strict adherence.

Some authors (i.e. Li, 2007, Patchin & Hinduja, 2006) have argued that anonymity equates to a power imbalance, or that the ubiquitous nature of CMC is sufficient for cyberbullying to inherently meet this criterion. While in certain instances this may be true, for the most part, cyber-aggression is not anonymous (Huang & Chou, 2010), and only online posts may potentially spread throughout a community. Therefore, it is inaccurate to assume that all cyber-aggression includes a power imbalance.

Bauman (2010) presented another argument against cyber-aggression's inherent power imbalance: the best predictor for cyberbullying is cybervictimization. Law et. al. (2012) reached the same conclusion: the majority of those who experience cyber-aggression are retaliating. Rivers and Smith (1994) operationalized a power imbalance as a situation in which the victim cannot retaliate. Therefore, it is likely that many instances of reported "cyberbullying" may more accurately be described as "cyber-aggression", because victims do defend themselves (Bauman, 2010; Wolak et. al., 2007).

Many authors have also asserted that repetition is an implicit feature of cyberbullying because material posted online can be viewed by a potentially unlimited audience (Kowalksi & Limber, 2008;Li, 2007; Patchin & Hinduja, 2006). Like with power imbalance, such a sweeping generalization is inaccurate. Not all acts of cyber-aggression are carried out this way, so one cannot assume that repetition is an integral aspect of cyber-aggression (Bauman, 2010).

Cyber-aggression is a more appropriate term than cyberbullying (Dempsey et. al, 2010). Traditional aggression is defined as any action done to intentionally harm another

individual (Crick & Grotpeter., 1996). This does not include the criteria for bullying, and may be widely applied to all intentionally cruel behaviors. While the research on cyberbullying has not stringently applied the bullying criteria, it has successfully identified willfully hurtful CMC-based behavior. Therefore, for the remainder of this review, I will use the term cyber-aggression to address actions carried out by way of CMC intended to harm other individuals, as I wish to avoid conflating aggression with true bullying.

Cyber-aggression and victimization: An extension of traditional aggression

My previous sections addressed evidence that gender and age patterns associated with traditional aggression are present in cyber-aggression as well. All researchers seem to be in consensus that cyber and traditional aggression are very closely linked. Bauman (2010) and Li (2007) suggested that cyber and traditional aggression are so closely related that they are mere extensions of one another.

There is considerable evidence indicative of this hypothesis. Those who engage in traditional aggression are more likely to be cyber-aggressors, and those who are traditionally victimized are often victims of cyber-aggression. (Vanzsonyi, Machackova, Sevcikova, Smahel, & Cerna, 2012). Ybarra and Mitchell (2004a; 2004b) suggested that traditionally aggressive individuals and cyber-aggressors share the same psychological profile – for example, traditionally aggressive people and cyber-aggressors both present with elevated levels of rule breaking behavior. Ang, Tan, and Mansor (2011) found that narcissism predicts traditional aggression and cyber-aggression, and furthermore, normative beliefs about aggression mediate this relationship in the same way. Slonje and Smith (2008) found similar age and gender patterns across traditional and cyber-aggression behaviors, and Hinduja and Patchin (2008) found that those who engage in

traditional aggression are more than 2.5 times as likely to be aggressive online. They also found that both traditional and cyber-aggressors share low empathy.

Many studies have generated results similar to that of Hinduja and Patchin; there have been many reports indicating that traditionally aggressive individuals are likely to also engage in cyber-aggression and traditional victims are likely to be cybervictims (Tokunaga, 2010). For example, Twyman, Saylor, Taylor, and Comeaux (2010) dichotomously classified students as cyber-aggressors, or non-cyber-aggressors, and also classified students as cybervictims, or non-cybervictims. Engagement in traditional aggression was measured by way of a 60 item scale to generate a continuous variable. Those classified as cyber-aggressors had significantly higher scores on the traditional aggression scale, and those classified as cybervictims had significantly higher traditional victim scores.

Raskauskas and Stolz (2007) performed a logistic regression predicting cyber-aggression from traditional aggression. The regression accounted for 16 percent of the variance after controlling for age and gender, indicating that both traditional aggression and victimization predicted their cyber equivalents. Juvonen and Gross (2008) performed a similar non-parametric analysis. After controlling for Internet use, they found that those who were victims of traditional aggression were seven times as likely to be victims of cyber-aggression.

Li (2006, 2007) and Raskauskas and Stolz (2007) suggested that aggression and cyber-aggression should not be differentiated because of their high rate of correlation (over 30 percent in both studies). The fact that there is a strong relationship between both traditional aggression and cyber-aggression, as well as traditional and cybervictimization,

supports the hypothesis that cyber-aggression is an extension of traditional aggression (Vandebosch & Van Cleemput, 2009).

Cyber-aggression's relationship to traditional aggression subtypes. Williams and Guerra conducted a study that explored the relationship between cyber-aggression and specific traditional aggression subtypes. They found a correlation of .67 between cyber and physical aggression and a .87 correlation between traditional verbal aggression and cyber-aggression.

The authors' study only contained two cyber-aggression questions, which addressed only direct cyber-aggression. It is possible that the selection of only direct cyber-items was partially responsible for the high correlation to physical and verbal aggression, which are both forms of direct-aggression. Williams and Guerra did not look for a correlation between relational forms of cyber and traditional aggression. In the future, researchers should pursue an analysis of the connection between relational cyber-aggression and its traditional equivalent.

Factor analytic explorations of cyber and traditional aggression

In my final discussion of the extent literature, I will address the ways in which recent authors have used factor analysis to explore the structure of cyber-aggression. Factor analysis represents a method by which researchers may explore the manner in which cyber and traditional aggression are interrelated. As discussed in the previous section, there is considerable evidence that cyber and traditional aggression are closely linked. However, as of the writing of this review, no researcher has attempted to factor analyze cyber and traditional aggression as an integrated construct. Instead, authors have either conceptualized cyber-aggression as a discrete dimension of aggression, or have

analyzed it in isolation. The first set of studies I discuss in the following subsections are analyses of cyber and traditional aggression items analyzed together. The second set of analyses explore the dimensionality of cyber-aggression in isolation.

Factor analyses containing both cyber and traditional items. Dempsy, Sulkowski, Nichols, and Storch (2009) performed a factor analysis that combined measures of traditional victimization with cybervictimization. They used the scale developed by Prinstein et. al., (2001) for overt and relational victimization, and then added four of their own items to address cybervictimization. These items were: 1) “A student sent me a text message that was mean or that threatened me”, 2) “a student posted a comment on my webspace wall that was mean or threatened me”, 3) a student sent me an email that was mean or threatened me,” and 4) “a student created a web page about me that was mean or had embarrassing information or photos.” Dempsy et. al. specified the aggression categories overt, relational, and cyber as different dimensions in their model. The RMSEA = .05, and CFI = .98 indicating a good fit to the item data.

There were two major flaws in this study, both concerning the manner in which the researchers sampled the content domain. To address traditional aggression, they used the items from the Prinstein scale. As discussed earlier, its content validity is questionable as this scale includes no items addressing direct verbal aggression, gossiping, or rumor spreading.

Second, Dempsy et. al.’s cyberbullying items did not adequately cover the appropriate content domain of cyberbullying as discussed by Willard (2007). Three of the four questions addressed only simple direct forms of cyber-aggression. Only the fourth item attempted to address relational aggression in that it referred to someone

posting mean things to a website. The relational item had a considerably lower factor loading than the rest (.63 vs. >.80).

Dempsey, et. al. (2011) performed another, similar study, examining cyberaggression. They used the same four items from the previous study, but reworded them to address perpetration. Again, they found good fit to the item data, RMSEA = .05, CFI = .99. They performed a cluster analysis on their results and discovered that groups emerged based on frequency of aggressive actions across all behaviors, opposed to aggression subtype. They concluded that this was powerful evidence that traditional and cyber forms of aggression are manifestations of the same phenomenon.

The content domain issues remained from the previous study. Dempsey et. al. themselves recommended specifically that future researchers should develop a more detailed questionnaire that may better span the content domain of cyber-aggression.

Factor analyses of cyber-aggression in isolation. Ang and Goh (2010) reported evidence for a unidimensional conceptualization of cyber-aggression. They collected data from 396 adolescents in Singapore with a questionnaire that contained 9 items. They divided their sample in half by selecting individuals at random, and performed an EFA on one half and then a CFA on the other half. For the EFA, they used three methods to explore the number of factors present among the cyber-aggression items: Eigen values greater than 1, parallel analysis, and scree plots. All of these methods suggested that a single factor solution would fit the item data best. For the CFA, they used the Sattora-Benlter χ^2 formula. The p value for the analysis was .22, non-significant, and indicated a good fit to the item data. They drew the inference that cyber-aggression is a global construct.

When one considers their questionnaire, however, their results can be interpreted differently: Ang and Goh found evidence that *relational* cyber-aggression can be considered unidimensional. Ang and Goh included only relational aggression items. They did not include any items that pertained to direct text aggression, or items that addressed picture-based aggression. Inclusion of such items may have provided evidence of a second factor. When Ang and Goh explored gender, they found that girls were more involved. As I discussed before with specific examples, cyber-aggression scales that have limited their scope to relational items have found greater prevalence among girls.

Mensinsi, Nocentini, and Calussi (2011) constructed a scale using Smith et. al.'s six methods of cyber-aggression and then divided those into three types: text bullying, prank calls, and picture-based bullying. They specified three possible models: one unidimensional, one with a two factor solution which separated phone call aggression and other CMC based-aggression, and a two factor solution in which the specified factors were picture and text-based aggression.

Separate factor analyses were conducted for male and female respondents. For the analysis that addressed male students' perpetration, the model specified to distinguish between picture and text-based aggression produced the best fit to the item data, RMSEA = .06, CFI = .96. Across all models, items that addressed phone call bullying had low loadings and were ultimately rejected as items to be included as part of the cyber-aggression's content domain. In terms of victimization, the two factor model that separated between text-based and picture versions of cyber-aggression fit even better; RMSEA for boys and girls = .04.

The authors only included two items that addressed picture aggression, and concluded that in the future, researchers should develop more items to address this form of aggression. In terms of gender's relationship to cyber-aggression, boys significantly more often engaged in picture-aggression. Not a single female participant admitted to perpetrating picture-aggression.

Menesini et. al. also found evidence to indicate that picture-aggression is a particularly severe type of aggression that might be in a class by itself. Using their unidimensional scale, they fit the data to an IRT model. They discovered that the items that involved using pictures discriminated the most severe aggressors from the rest; those who endorsed items related to this type of aggression were more likely than not to endorse all other, lesser forms of cyber-aggression. The fact that picture-aggression discriminated so effectively, and that a two dimensional solution separating text and picture-aggression fit the data best, is strong evidence that picture aggression is a separate category from text-based aggression.

Law et. al. (2012) performed a study that yielded similar results. They administered a questionnaire to 675 students enrolled in sixth through twelfth grade. Their scale included a total of 9 items: three items addressed aggression, three addressed victimization, and three addressed being a witness. The items asked about whether a student had "posted mean things" about other students, "replied to mean things" said about students, or "sent mean pictures" – there were versions of each item to address perpetration, victimization and witnessing. The items loaded on two factors; one for text-based aggression, and one for picture aggression. Fit indices were adequate, RMSEA =

.08, CFI = .99. These results further support the argument that there may be more than one subtype of cyber-aggression: text and picture.

Exploring cyber-aggression as interrelated to traditional-aggression

I have addressed recent attempts to factor analyze cyber-aggression in isolation, and cyber-aggression combined with traditional aggression. There appears to be evidence that cyber-aggression contains at least two dimensions: text and picture. While the studies that combined cyber and traditional aggression items together in the same scale found evidence that cyber-aggression may be conceptualized a discrete category of aggression, researchers have yet to attempt to integrate cyber and traditional aggression items together.

The extent literature provides rich evidence that cyber and traditional aggression are highly related constructs, to the extent that they may be an extension of one another (Tokunaga, 2010). Li (2007) and Bauman (2010) argued that cyber and traditional aggression are inextricably linked to the extent that they may be considered one and the same. However, researchers have yet to develop an overall framework of aggression that accounts for both cyber and traditional versions. While many authors have shown that cyber and traditional aggression predict each other, as of the writing of this review, researcher have not yet attempted to synthesize cyber and traditional aggression into an integrated construct, even those who have factor analyzed cyber and traditional items together (i.e. Dempsy et. al. 2009;2011).

As was pointed out by Smith et. al. (2008), researchers have treated cyber and traditional aggression as two separate, global phenomena, even when exploring their relationship. They also acknowledged that there may be an underlying dimensionality to

cyber-aggression similar to traditional aggression. We may gain a better understanding of the relationship between cyber and traditional aggression by exploring whether there are certain behaviors among both that are equivalent or analogous.

Williams & Guerra (2007) found that certain types of traditional aggression predict certain forms of cyber-aggression, though they did this only for direct-aggression behaviors. Given the highly related nature of cyber and traditional aggression, it is plausible that there are behaviors in addition to direct-aggression that are analogous to each other. The underlying dimensionality suggested by Smith et. al. (2008) may share commonalities to traditional aggression. This hypothesis is supported by my examples of how boys more often engage in direct cyber aggression, and girls more often engage in relational. This pattern mirrors that of traditional aggression. A factor analytic framework that would explore an integrated relationship between cyber and traditional aggression may be the best way to illustrate the way cyber and traditional aggression are intertwined.

Objectives of the present study

This review has been an in depth exploration of the issues inherent to the study of cyber- aggression, examined within the broader context of traditional aggression, bullying, and cyberbullying. I included descriptions of definitions, features, and correlates of cyber-aggression including its relationship with age, gender, and traditional aggression. I identified the different ways researchers have operationalized and measured the phenomenon, and described its content domain. I also have examined the content domain of traditional aggression, and explored how various researchers have sorted aggression's constituent behaviors into three major categories: physical, direct-verbal, and relational.

What has yet to be explored within the extent literature is the structure of cyber-aggression. Although several studies have categorized traditional bullying behaviors, little research has been devoted to categorizing cyber-aggression, with the exception of Law et. al. (2012) and Menesini et. al. (2011). Additionally, the extent research contains conflicting theories regarding the relationship between traditional and cyber-aggression; some authors place cyber- aggression in a class by itself (Dempsy et. al., 2012), whereas others suggest that cyber-aggression is merely an extension of traditional aggression, and should not necessarily be considered conceptually separate from traditional aggression (Bauman et. al., 2011; Li, 2006). Much of the variability across results in cyber-aggression research may be attributable to an inconsistently defined and measured content domain.

The present research seeks to gain insight in these issues through an in depth exploration regarding the structure of both traditional and cyber-aggression using confirmatory factor analysis. There are three main objectives: 1) to explore the structure of cyber-aggression through a scale that comprehensively addresses the content domains of cyber-aggression, 2) to assess if parallel structures can underlie measures of cyber-aggression and traditional aggression and 3), to use the knowledge gained from these explorations to develop and test models that include a single structure for understanding the relationships between and within traditional aggression and cyber-aggression. By examining these models, I can evaluate to what extent that cyber- aggression is an extension of traditional aggression, and how both forms of aggression can be conceptualized as coexisting within a general framework of aggression.

Method

Participants

Data were collected from 553 middle school students located in a central Illinois school district. The participants included 265 boys and 288 girls who were in sixth, seventh, and eighth grades. The numbers of students in these grades were 186, 179, and 188, respectively. 73.8 percent of the students identified as white, 15.7 percent identified as Hispanic Latino/Latina, 5 percent identified as African American, 5 percent identified as mixed-ethnicity, and 1.6 percent identified as Asian. In addition there was a single student who identified as American Indian, and a single student who identified as a Native Hawaiian or Pacific islander. Sixty-five percent of the students received free or reduced priced lunches.

Overall, the sample frequently engaged in all modalities of CMC identified in the questionnaire. For example, over 80 percent of the participants talked on their cell phones everyday and texted everyday; over 35 percent spent three hours or more texting. Over 90 percent browsed the Internet every day and over 34 percent browsed for three hours or more. The sample engaged in sending emails, using chatrooms, and using messenger to a slightly lesser extent, but still reported relatively high levels of usage. Over 28, 36, and 42 percent of the participants reported that they engage in these modalities for at least a minute a day, respectively. Use of social media such as Facebook also had a high prevalence; over 79 percent reported using social media every day, and over 33 percent used social media for more than three hours a day. A complete report of the overall sample's CMC use is contained in Table 1.

Table 2 contains prevalence of CMC use across grade and gender. In general, participants indicated that they use CMC more as they get older, and females more frequently engage in CMC related activities on a daily basis. For example, over 92 percent of eighth grade girls talked on their cell phones everyday and over 11 percent spent three or more hours doing so. Over 94 percent texted everyday and 60 percent spent more than three hours a day doing so. Over 51 percent of the eighth grade girls reported spending over three hours a day using social media such as Facebook. In comparison, over 9 percent of eighth grade boys spent three hours or more talking on a cell phone, and over 30 percent spent the same amount of time texting. Over 42 percent of the eighth grade boys spent over three hours a day using social media like Facebook.

Instrument

Students were administered a questionnaire. It contained 43 items divided among four sections. The first section of the survey covered demographic information and, in particular, gender and grade. The remaining three sections assessed CMC use, cyber-aggression, and traditional aggression. A sentence prefaced the two aggression portions of the questionnaire, to clarify to the students which type of behavior was being discussed in order to ensure no behaviors were double counted.

Before the questionnaire was administered to the general school population, I recruited a focus group of students to preview the questionnaire and assist me in further refining that quality of its items. This procedure helped improve clarity in regards to my intent and therefore enhance the substantive validity of my questionnaire. In the Procedure section, I describe the steps taken by the focus group in giving feedback about the questionnaire.

I next describe the three primary portions of the questionnaire after the items were revised based on the information provided by the focus group.

CMC items. Items that addressed CMC use asked students about how many hours a day they spend using various methods of electronic communication such as cell phones, computer e-mail, and personal websites such as Facebook. The verbal anchors for CMC items were as follows: 1 = none at all, 2 = between 1 minute and 1 hour, 3 = 1 to 2 hours, 4 = 2 to 3 hours, and 5 = more than 3 hours a day.

Items for cyber-aggression. The development of the cyber-aggression items was guided by the purpose of the study, which was to gain a more thorough understanding of the structure of cyber-aggression and how it may be conceptualized as an integral part of general model of aggression. To meet this purpose, the cyber-based items within this questionnaire were developed to allow for consistency with categories associated with traditional aggression. Cyber-based aggression can be overt in a manner similar to traditional aggression. For example, an individual can send a mean text to someone directly. Likewise, cyber-aggression may be relational. For example, one can spread rumors using CMC. It is important to note that I constructed the cyber-aggression measure not only to allow it to fit within a more general framework of aggression, but also to span the domain of cyber-aggression and in so doing, to assess the structural differences between cyber and traditional aggressive behaviors.

The majority of the cyber-aggression items were based on the six categories of cyber- aggression identified by Willard (2007), Smith et. al. (2008), and Patchin and Hinduja (2008). The domains specified by these authors included: “flaming and harassment” (direct text-based harassment either via computer or cell phone),

“cyberstalking” (threatening by any modality of CMC), “denigration” (the act of either spreading rumors or saying mean things behind someone’s back by cell phone or computer based text), “masquerading” (impersonating another individual while on-line to make them look bad), and “outing” (disclosing private information discovered in confidence).

I reframed the behaviors identified by these authors to fit with my hypothesis that some cyber-aggression behaviors may parallel traditional versions by phrasing them to correspond with my hypothesized traditional equivalents. For example, I used the concepts of “flaming and harassment” and “cyberstalking”, which are direct text-based attacks, to guide my development direct text-based items. Similarly, I used the concepts of “denigration” which is essentially CMC- based gossiping and rumor spreading, to guide my development of relational text-based aggression items. “Masquerading” and “outing” both seemed to be conceptually relevant to relational aggression because they are attacks on someone’s reputation or personal relationships. Therefore, these behaviors were considered relational when I developed items based on them.

Though the previously mentioned authors acknowledged the existence of picture-based aggression as well, more recent research has brought focused attention to this particular method of aggression. Menisini, Nocentini, and Calussi (2011) provided evidence that picture and video-based cyber aggression constitute a category separate from all text-based aggression. Accordingly, I considered items involving pictures or videos as a separate category in some of the models specifying the items structure. Because cyber-aggression with pictures or videos in certain instances (such as with “happy slapping”) requires physical actions, I also hypothesized that it may be cyber

aggression's equivalent to the category of "physical" within traditional aggression, and thus reflected this hypothesis in some of the models that included both traditional and cyber-aggression items.

Students were asked to respond to cyber-aggression items based on their behaviors in the last year. The verbal anchor for these items was 1 = never, 2 = once or twice, 3 = 3 to 5 times, 4 = 6 to 10 times, and 5 = more than 10 times.

Items for traditional aggression. Items were also developed to cover all possible traditional methods of aggression, using items previously identified by Crick and Grotpeter (1995), Rivers and Smith (1994), Olweus (1993, 1999), and Prinstein et. al. (2001).

Though many traditional aggression scales exist, I developed new items in an attempt to align the language used to describe traditional and cyber aggression in order to create a survey that allowed for an integrated view of aggression. The following behaviors were identified as physical aggression: punching, kicking, pushing, or shoving another student in a mean way, doing something to embarrass or humiliate someone in front of other people, forcing someone to do something he or she does not want to do, and taking away, stealing, or otherwise damaging somebody else's physical property. Verbal aggression was defined in terms of calling someone mean names, teasing someone in a hurtful way, or speaking disrespectfully to someone to hurt their feelings. The following behaviors measured relational aggression: spreading rumors about someone whether they are true or not to make people dislike that person, making fun of somebody behind his or her back so that people will not like him or her, excluding another student, trying to elicit peers to help exclude someone, and ignoring an individual to hurt his or her feelings.

Students were asked to respond to aggression on the same scales as the cyber-aggression items: the verbal anchor for these items were 1 = never, 2 = once or twice, 3 = 3 to 5 times, 4 equals 6 to 10 times, and 5 = more than 10 times.

Other items. In addition to the items addressing cyber and traditional aggression, the survey also included four items addressing the construct cyber-victimization. These items were previously used by Dempsey et. al. (2009) and displayed acceptable evidence of internal reliability (Chronbach $\alpha = .74$.) and unidimensionality (items with factor loadings ranging from .70 - .88). These items were not the focus of my dissertation research. The last two items of the survey asked about the use of CMC for the purpose of retaliation. More specifically, they asked students if they had done something bad to someone using CMC to retaliate against that person for either something they did in the real world or online.

Overview of analysis

In order to examine to what extent cyber and traditional aggression parallel each other and coexist within the framework of a general factor of aggression, I created three sets of CFA models: the first addressed traditional aggression, the second addressed cyber-aggression, and the third was comprised of models that combined both traditional and cyber-aggression behaviors. I attempted to align the models in the first two sets so that they contained parallel structures, which is consistent with my argument that cyber-aggression should be subsumed within a general model of aggression. The parallel structures also allowed for a merging of cyber and traditional aggression in the third set of analyses.

In order to analyze the data, I estimated polychoric correlations with WLSMV. Item responses are not truly quantitative in nature, and the standard maximum likelihood approach assumes that the scores are quantitative and, more precisely, normally distributed. The literature suggests that analyses of item data using ML are likely to yield incorrect results. Estimating polychoric correlations by way of WLSMV is more appropriate for item data in that this approach takes into account that scores on item data are categorical in nature.

Traditional cyber-aggression models. The initial group of analyses was intended to examine the structure of models for the traditional aggression items. I began by fitting a baseline model that included a single general factor of aggression. Subsequently, I fit more complex models, which had to fit better than the baseline model to be considered as a viable alternative. I based my traditional multi-factor aggression models on the theories first postulated by Lagerspetz et. al. (1988) and later both Bjorkvist et. al. (1992) and Prinstein et. al. (2001) that aggression can best be best conceptualized as comprised of three categories: physical, verbal, and relational.

Cyber-aggression models. I also examined various cyber aggression models to explore whether the structure underlying cyber-aggression is parallel to the structure underlying traditional aggression. Similar to the traditional model, I first established a baseline model that included a single general factor and followed up by assessing the fit of a series of more complex models. I treated cyber-aggression as being comprised of three dimensions that potentially mirror those of traditional aggression: picture, direct-text, and relational-text.

Combined models. If some form of parallel structure exists between models, it may also be the case that factors can be defined that are linked to both traditional aggression items and cyber-aggression items. For example, a single group factor might underlie both traditional verbal aggression and cyber verbal aggression items. Finding factors that are relevant to both traditional and cyber-aggression items and factors that are unique to each of these two types would help us understand how these two forms of aggression are intertwined but distinct.

Procedure

In this section, I describe the procedures involved in collecting data from the focus group and from the primary sample to assess the psychometric quality of the traditional and cyber measures.

Focus group. I administered an initial paper-based version of the questionnaire to the focus group which consisted of eight students. The group included two boys and two girls from 7th and 8th grades. They were selected by the principal of the middle school. These students had served as a focus group for past projects introduced by the principal, and were selected by her based on both their academic and social skills. I instructed the students to write down notes about their thought process regarding the items as they completed the survey. Following completion of the survey, I held an open discussion with the participants so they could express their opinions about the nature of the items on the questionnaire. The students had many suggestions and concerns – foremost among these was doubt regarding whether other participants would answer the questions truthfully. Several of the participants expressed that some students may be convinced that admitting to aggressive behaviors may cause them to be punished. Therefore, they

recommended that the survey contain language to emphasize the fact that it is completely anonymous. Additionally, the focus group suggested that the anchors on the response scale be revised to represent fewer acts of aggression, and in so doing, to increase the use of all response values.

In regards to the individual items, the students generally approved of their phrasing and believed them to be clear regarding my intent. They had a few specific recommended revisions. Originally, each item addressing cyber-aggression was phrased this way: “How often have you called someone mean names with cell phone texts, emails, chatroom messages, Instant Messenger, or by posting messages online?” The students unanimously endorsed that the phrasing be changed to “How often have you called someone mean names by using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to make them feel bad?” Their opinion was that this better “expressed the way that they thought.” They specifically recommended that the reference to “chatrooms” be eliminated because the term is no longer used. The students also suggested that word “bad” be used instead of “mean” in the sentences that followed the anchors (“sometimes people do bad things to each other using technology or social media” and “sometimes people do bad things to each other in general.”). These were the sentences used to imply which type of aggression the next section in the questionnaire would address, to ensure that behaviors were not double counted.

I took careful notes on the focus group members’ opinions and collected their completed surveys with the each group members’ individual notes. The survey was then revised using the group’s feedback. The focus group was gathered together again and the

survey was re-administered. The revised survey was met with approval from the focus group – they had no further suggestions regarding additional revisions to the survey. The focus group participants were all in agreement that the content of the revised questionnaire was clear in regards to my intent.

The revised questionnaire contained 43 items, and resembled the original questionnaire, but contained four substantive revisions as a result of the focus group:

- All references to anonymity were bolded and underlined and the phrase “no one will ever know who you are” was added to further emphasize and clarify the anonymous nature of the questionnaire.
- The word “mean” was substituted with the word “bad” in the sentence following each anchor, and the anchor was revised to indicate that responses 1 to 5 corresponded to the performance of a particular behavior “never”, “once or twice” “three to five times” “six to ten times” and “more than ten times” respectively.
- The content of each of the cyber-items was modified to reflect the suggestions discussed in the previous section.

Both the original and revised version of the questionnaire are contained within Appendix A.

Administration. The survey was administered during the students’ physical education and health classes by their physical education teachers all during the same day. A paper-based version of the survey was used, and the students filled out their responses on a Scantron form. The physical education teachers were explicit in emphasizing the anonymous nature of the survey. The survey took approximately 30 minutes to complete.

Passive consent was obtained from the parents of the children, consistent with the practice of the participating school district.

Results

Traditional aggression

Mplus was used to conduct all analyses. In Figures 1 through 17, I present various primary models that were fit to address the purpose of the study. The figures include standardized parameter values.

As shown in Figure 1, I initially tested a baseline model examining traditional aggression that would provide a point of reference for the more complex models to follow. All traditional aggression items loaded with acceptable factor loadings on the single general factor, ranging from .64 to .88. However, while the model yielded an acceptable CFI value of .95, the RMSEA value of .12 was inadequate. $\chi^2(54) = 445.59$.

Next, I tested three models for traditional aggression that each incorporated the three dimensions of physical, verbal, and relational aggression. First, I conducted a CFA with three correlated group factors: physical, verbal, and relational aggression. Then, I fit a hierarchical model with a second order factor of general aggression that explained the covariation among the three group factors of aggression. Finally, I tested a bi-factor model, allowing a general factor of aggression to affect directly all items as well as the three group factors of physical, verbal, and relational aggression. As with all the bi-factor models, the covariance between factors were constrained to zero. Table 3 contains a summary of how each traditional aggression item was categorized.

The correlated three factor model and the hierarchical model are mathematically equivalent and demonstrated good fit to the data: $\chi^2(51) = 152.93$, RMSEA = .06, CFI = .99. The results for these models are shown in Figures 2 and 3. The models yielded strong factor loadings which ranged from .68 to .92. The majority of these loadings exceeded

.80. The correlated three-factor model had very high correlations between factors, ranging in value from .80 to .84. For the hierarchical model, the second order factor of general aggression loaded heavily on the first order factors (i.e., .86 to .95).

As presented in Figure 4, the bi-factor solution also displayed acceptable fit indices: $\chi^2(42) = 152.33$, RMSEA = .07, CFI = .99. The factor loadings for the general factor were generally strong (i.e., .55 to .83) whereas the loadings on the group factors of physical, verbal, and relational aggression ranged between .28 to .44, with two exceptions. The lower factor loadings across group factors are expected within the context of a bi-factor model. Item 32 and 33 yielded much lower factor loadings (i.e., .03 and .05). These items addressed an individual forcing someone to do something he or she does not wish to do, and stealing or vandalizing property, respectively.

In addition to the four models discussed in this section, I tested a variety of other models examining traditional forms aggression, and the figures representing these models are included within Appendix B. The models in the appendix differed in that they conceptualized aggression as direct or relational, and ignored differences between physical and direct-verbal aggression. I created these models to reflect the way in which the extent literature has evolved regarding the way aggression has been conceptualized. I chose to ignore these models in order to focus on the most current conceptualizations of aggression; the most current did yield superior indices of fit. The means and standard deviations for the participants' engagement in traditional aggression across gender and grade are displayed in Table 4.

Cyber-aggression

I tested a baseline model for cyber aggression that would serve as a point of reference for the more complex cyber aggression models. As shown in Figure 5, it included a single general factor. Similar to the general factor model for traditional aggression, the RMSEA = .11 and indicated inadequate fit, although the CFI of .95 did suggest good fit relative to the null model. $\chi^2(90) = 647.50$. The factor loadings for the general factor were acceptable and ranged from .65 to .90.

A major objective of this research was to establish whether there exists a structure within cyber-aggression that is analogous to traditional aggression. Therefore, I examined three models in regards to CMC-based aggression. Each of these models contained three factors comprised of items that may possess a parallel nature to those contained within traditional aggression. Table 5 contains a detailed description of these items.

First I conducted a correlated, three-factor CFA examining the structure of the cyber-aggression items. The items were grouped into the categories of direct text-based aggression, relational text-based aggression, and picture aggression. The logic behind these groups was that direct text-based aggression is analogous to traditional direct verbal aggression, relational text-based aggression is analogous to traditional relational aggression, and that picture-based aggression may be the equivalent to physical aggression. The results of the correlated three-factor CFA for cyber aggression can be seen in Figure 6. The model displayed good fit indices: $\chi^2(87) = 230$, RMSEA = .06, and CFI = .98.. Factor loadings were strong, ranging from .68 to .93; the majority of which were higher than .80. There was a high degree of correlation between factors (i.e. overt text-based, relational text-based, and picture), ranging in value from .64 to .86.

Next, a hierarchical version of the previous model was tested, which had to yield identical fit indices and factor loadings to correlated three factor CFA. As with the hierarchical model of traditional aggression, the factor of general cyber aggression loaded heavily on the three first-order factors, as shown in Figure 7. One of the loadings (i.e. 1.06) was greater than 1.0, the theoretical maximum value for this loading. This may have been due to sampling error and that the correlation between cyber aggression and relational text-based aggression approaches 1.0 in the population.

Following the same pattern of analyses used to examine traditional aggression, I examined a bi-factor model that contained a general factor of cyber-aggression and the three group factors of picture-based, over text-based, and relational text-based aggression. Figure 8 displays the results of this analysis. The model yielded excellent fit indices, $\chi^2(75) = 164.59$, RMSEA = .05, CFI = .99, and strong factor loadings for the general factor and the two group factors. However, the factor loadings for relational text-based aggression were generally close to zero or negative.

As shown in Figure 9, I also explored a bi-factor model based on Menesini, Nocentini, and Callussi's (2011) work that cyber aggression can best be conceptualized as comprised of text-based and picture-based aggression. This model also yielded excellent fit indices, $\chi^2(75) = 150.55$, RMSEA = .04, CFI = .99. The pattern of the factor loadings across group factors was more consistent than that of the three group factor model.

Figure 10 displays a model in which I fit only two group factors to the data: one for picture aggression and one for direct text aggression. The fit indices were identical to the preceding model, $\chi^2(82) = 186.31$, and the factor loadings remained strong. This

evidence suggested that while group factors account well for picture and direct text aggression, the variance for relational text based aggression is better accounted for by the general factor of cyber-aggression.

I tested several additional alternate hypotheses regarding the structure of cyber-aggression, building from a model describing a general factor of cyber aggression to several more intricate models. These models were created to reflect a pattern parallel to the evolution of the way in which researchers have conceptualized traditional aggression (i.e. overt and relational only). The figures displaying the results of these analyses are in Appendix B. The means and standard deviations for the participants' engagement in cyber-aggression across gender and grade are contained in Table 6.

Combined Models

Up to this point in the extent literature, cyber-aggression behaviors have most often been conceptualized as contained within a category of aggression separate from those that comprise traditional aggression. The next series of models explored how different methods of traditional and cyber-aggression can be combined into a single model. In other words, cyber-aggression is subsumed within a more general framework of aggression. I refer to these following models as “combined” because they combine traditional and cyber-aggression into the same model by way of a various conceptualizations.

As shown in Figure 11, I began this series of analyses by testing a baseline model with a single factor of general aggression underlying both traditional and cyber items. Factor loadings were strong, and ranged from .61 to .86. The global fit indices adequate, but not good fit. $\chi^2(324) = 1821.87$, RMSEA = .09, CFI = .90.

As shown in Figure 12, I then fit a bi-factor model in which all items loaded on a general factor of aggression, and cyber-aggression items were allowed to load on a general cyber-aggression factor. The fit indices were better than the previous model, $\chi^2(309) = 1282.15$, RMSEA = .08, CFI = .94. The factor loadings for the general factor of aggression were acceptable, and ranged from .55 to .85; the factor loadings for cyber-aggression ranged from .24 to .65.

Following these baseline models, I fit three combined models configured to illustrate ways in which both cyber and traditional aggression may be integrated within a framework of general aggression. As shown in Figure 13, this first model was a bi-factor model that contained a general factor of aggression and four separate group factors for physical, verbal, relational, and cyber-aggression. This model conceptualized cyber-aggression as a discrete group factor separate from the other forms of aggression, and served as a point of comparison for the following models. This bi-factor model demonstrated good fit, $\chi^2(297) = 1034.56$, RMSEA = .07, CFI = .95. Factor loadings were generally acceptable, with the exception of the physical aggression items. As before, items 32 and 3, dealing with forcing someone to do something he or she does not want to do, and theft, had low loadings. However, item 30's loading was extraordinarily high (2.2) and item 31's was much lower in this model than in others (.06). A standardized loading should not exceed one. Item thirty's loading that this solution is problematic.

Figure 14 displays the second model in the series. In this bi-factor model, I fit a general factor and three group factors. The group factors merged potentially analogous traditional and cyber aggression items together: physical/picture aggression, direct

verbal/text-based aggression, and relational/relational text-based aggression. My theory was that because physical aggression and picture aggression both use physical means, they may be grouped together. The model yielded good fit indices, $\chi^2(282) = 670.00$, RMSEA = .05, CFI = .98. The group factor for physical/picture aggression had solid factor loadings for the picture based items, but poor loadings across traditional physical items. The other factor loadings were strong, with the exception of the final two cyber items conceptualized as relational (V28 and V29) which addressed impersonating an individual online, and revealing information online given in confidence.

Figure 15 displays the third combined model in the series, which resembled the second in all respects except that it separated picture-based aggression from traditional physical aggression. This model yielded very good fit indices, $\chi^2(282) = 660.11$, RMSEA = .05, CFI = .98, and also displayed solid factor loadings with the exception of items 32, and 33 for traditional physical, and 28 and 29 for relational, which have displayed low factor loadings across all previous models. With the exception of the couple of items that have performed poorly across most of the previous analyses, this model represents a highly plausible framework in which to conceptualize cyber and traditional aggression as coexisting within the same general framework.

A series of various alternate models that explored the shared nature of traditional and cyber aggression items are contained within Appendix B.

Hierarchical combined models

Figure 16 displays a hierarchical model nested within a framework which contained a separate group factor for cyber-aggression items. I fit the data in a similar manner to the preceding bi-factor models. This model contained a factor for general

aggression which loaded on four group factors: physical aggression, verbal/direct text-based aggression, relational/relational cyber aggression, and picture-based aggression. It displayed very good fit indices, $\chi^2(305) = 725.94$, RMSEA = .05, CFI = .97, and produced strong factor loadings across all items. The general factor of aggression loaded heavily across the four second order factors. The results of this model provide convincing evidence of another viable way (as compared to Figure 15) of conceptualizing both cyber and traditional aggression as existing together within the framework of a general factor of aggression.

I also fit a more parsimonious hierarchical model to the data, which is displayed in Figure 17. This model did not include a group factor for cyber-aggression items. It yielded acceptable indices of fit, $\chi^2(320) = 1145.16$, RMSEA = .07, CFI = .95, and very high factor loadings across all items, ranging from .66 to .93. The second order factor of overall aggression loaded heavily on the four first order factors. The fit of the bi-factor model was superior to the more parsimonious version that did not contain a group factor for cyber aggression. I chose to limit the focus of this study to bi-factor models, though a series of additional hierarchical models that illustrate other conceptualizations of a shared aggression framework are included within Appendix B.

Factor invariance tests for gender and grade

The combined model represented in Figure 15, which contained four group factors for physical, overt-verbal, relational, and picture aggression, and the nested hierarchical model represented in Figure 16 which contained the same four group factors but considered them a function of general aggression, represented perhaps the best conceptualizations of cyber and traditional aggression within a shared a general

framework. Therefore I chose to conduct factor invariance tests on these two models to see if they were consistent in structure across gender and grade level.

For the model represented in Figure 15, I first specified two version of the model: one that constrained the parameters to be equal across gender, and one that allowed them to differ. I then performed a χ^2 test to evaluate the difference in fit between the two versions. The unconstrained model had a $\chi^2 (282) = 660.11$, and RMSEA = .05, CFI = .98. The constrained version had a $\chi^2 (708) = 1002.60$ and RMSEA = .04, CFI = .98. The result of the χ^2 difference test was non-significant, $\chi^2 \text{ diff } (426) = 342.49$, $p = .99$, indicating structural invariance across genders.

I next performed a similar analysis, this time specifying a version of the model in which parameter estimates were constrained across grade-level, and one in which they were allowed to differ. The unconstrained version of the model was identical to the previous, $\chi^2 (282) = 660.1$, RMSEA = .05, CFI = .98. The constrained version had a $\chi^2 (1134) = 1456$, RMSEA = .04, CFI = .98. The result of the χ^2 difference test was non-significant, $\chi^2 \text{ diff } (852) = 796.65$, $p = .91$, indicating invariance across grade levels, as well as gender. The factor loadings across gender and grades for these constrained models are displayed in tables 7 and 8 respectively.

I performed the same analyses for the nested hierarchical model displayed in Figure 16. First I specified a version of the model that constrained parameters across gender to be equal, and then compared that to the unconstrained model that allowed them to differ. The unconstrained model had a $\chi^2 (305) = 725.94$, RMSEA = .50, CFI = .97. The constrained model yielded a $\chi^2 (756) = 1128.65$, RMSEA = .04, CFI = .98. The χ^2

difference test was non-significant χ^2 diff (451) = 405.44, $p = .94$, indicating structural invariance across genders.

I specified one more model that constrained parameter estimates across grade-level. The unconstrained model was the same as the previous χ^2 (305) = 725.94, RMSEA = .50, CFI = .97. The constrained model displayed a χ^2 (1207) = 1613.17, RMSEA = .04, CFI = .97. This difference test also yielded a non-significant result χ^2 diff (902) = 889.96, $p = .61$, indicating invariance across grade levels. The factor loadings across gender and grades for these constrained models are displayed in tables 9 and 10, respectively. These results suggest that grade and gender for both of the models described in this section can be ignored when considering the overall results of my analyses.

Discussion

In the discussion, I will address a number of topics. First, I will briefly discuss my exploration of traditional aggression models, followed by cyber-aggression models. I will then address two particular combined models that provide convincing evidence that traditional and cyber aggression are best conceptualized as combined within an integrated framework. I will explain in detail my logic as to why these two models are conceptually sound. I will then address future directions for research involving cyber-aggression, given the evidence I have discovered regarding its integrated relationship with traditional aggression.

The structure of traditional aggression

The objective for my analyses of traditional aggression items was to determine conceptually meaningful structural models that best fit these items, and also relate them to past research. I confirmed that my traditional aggression items displayed a factor structure consistent with that discussed in the extent literature. Through my examination of several competing models, it was clear that a solution that contained three dimensions describing physical, verbal, and relational aggression as related, but separate categories of general aggression yielded the best fit to the item data.

The structure of cyber-aggression

My next step was to examine if there exists a structure within cyber-aggression parallel to that of traditional. The correlated three-factor model and hierarchical models that separated cyber aggression items into three categories yielded very good fit, and factor loadings that would suggest a relation between behaviors consistent with my hypothesis of parallel structures. If I had not explored the bi-factor model, I may have

drawn a strong conclusion that cyber aggression follows an identical pattern to that of traditional aggression.

Examination of the bi-factor model revealed results inconsistent with the three factor hypothesis. The bi-factor model had good indices of fit, and the picture-based and direct-text group factors displayed very good factor loadings, but those for the relational component were low, with some displaying a small inverse relationship with the group factor.

I tested an alternate model that in addition to the general factor, separated cyber aggression into two categories, one including all text based items and another that included all picture based items. Even when constrained using the bi-factor method, this model yielded superior results to the three group solution. Fit indices were the same across models, and the factor loadings fared better in the text vs. picture arrangement. From these results it would appear that those who engage in one form of text based aggression are likely to use other text based methods, and that those who engage in one type of picture aggression are likely engage in a variety of methods. Menesini, Nocentini, and Calussi (2011) found similar results and postulated that picture aggression represents a more severe form of aggression than that of text-based because it requires of *sequence of premeditated actions* and may represent a level of aggression separate from all others.

Combined models

I found evidence that supported a three dimensional model of traditional aggression, and that cyber-aggression items in isolation are best conceptualized as belonging to a model consisting of two factors: text and picture. However, when I analyzed both traditional and cyber items together, I found evidence that traditional and

cyber aggression are best conceptualized as belonging to a single, synthesized model of general aggression.

Bi-factor model with four group factors. Among all the combined models I examined, two models in particular provided excellent conceptualizations of the way in which traditional and cyber-aggression co-exist within a shared general frame work. The first of these models is represented in Figure 15. This model contained four group factors: physical, verbal/direct-text, relational/relational-text, and picture-based. I separated picture and physical aggression into separate group factors, but allowed the remaining items to be contained within shared group factors for direct-verbal and relational aggression.

The separation of picture-based aggression items into their own category is conceptually logical, as is the separation of physical aggression items. Picture-based aggression represented a unique factor among cyber-aggression items when analyzed in isolation, and physical aggression represented a distinct category among traditional aggression items as well. Therefore, when placed within a combined framework, it stands to reason that examples of picture-based behaviors and physical-aggression behaviors continue to constitute separate categories. They are distinct from the other types of aggression, and are also separate from each other. While certain picture-based behaviors may require an act of physical aggression, such as “happy-slapping”, in general, the dissemination of cruel pictures or videos does not require the perpetrator to be physically aggressive.

Direct-verbal and relational aggression are far more conceptually similar to their cyber versions, and this model displayed evidence indicating that they are indeed

analogous. Sending someone a mean text message is not performed face-to-face, though it remains a direct assault on the victim using words. Likewise, relational aggression carried out via CMC is also conceptually similar to the same behavior carried out by way of traditional means. Whether an individual is spreading mean rumors by word of mouth or via the internet, both behaviors represent attempts at using words to damage someone's reputation or relationships. This model confirmed the equivalence of these behaviors.

In specific regards to the analogous nature of cyber and traditional relational aggression, the most intriguing aspect of this model was that the relational text-based items loaded much more strongly together when combined with their traditional equivalents. In the model where I examined cyber-aggression in isolation and attempted a structural arrangement parallel to that of traditional, I found that relational text-based items loaded inconsistently with each other. Once I combined them with traditional items, their overall factor loadings increased considerably. Additionally, verbal and direct text-based aggression displayed consistent factor loadings when combined into the same group. Overall, this model convincingly demonstrated how traditional and cyber-aggression are both contained within a framework of general aggression.

Nested hierarchical model with four group factors. Figure 16 displays a second model that convincingly illustrates how both cyber and traditional aggression can be conceptualized as coexisting in the same framework. I specified this model so that four first order factors were a function of a general factor of aggression. The first order factors were the same as the group factors discussed in the previous model: physical, direct-verbal, relational, and picture. Like the previous model, direct-verbal and relational

aggression were considered shared factors that contained both cyber and traditional items. This model also contained a group factor for cyber-aggression to account for cyber-aggression's unique contribution of variance to the overall model.

Conceptually, this model considered all categories of aggression, and consequently, all aggressive behaviors, to be a function of a general tendency toward aggression. This would include both cyber and traditional means. This is logical considering a phenomenon consistently displayed by all of the models I specified in this study: those who are more aggressive in general are more likely to engage in any given behavior, regardless of category. From the most parsimonious models to the most complex, all the items presented in this study have loaded solidly on a general factor of aggression. Therefore, one may conclude that the best way to conceptualize both cyber and traditional aggression as coexisting within the same framework is that they share categories, *and* are all a function of tendency toward aggressive behavior.

The uniqueness of cyber-aggression. In addition to the hierarchical model that contained a group factor for cyber-aggression, I also specified one that did not, but was in all other ways identical (i.e. it contained the four same group factors and a higher order general factor of which they were a function). This model is displayed in Figure 17. For this model, aside from the inclusion of the factor for picture-aggression, I made no attempt to distinguish cyber and traditional aggression. The model displayed adequate fit indices and factor loadings, and made sense conceptually: all forms of aggression can be construed as a function of general aggression, regardless of whether they are cyber or traditional. From this evidence, one might be tempted to make the inference that, aside

from picture aggression, there is simply no need to distinguish between cyber and traditional aggression.

Such an inference is questionable once one considers that the combined model that did include a group factor for cyber aggression displayed superior fit, and that the group factor for cyber aggression accounted for considerable variance. A more parsimonious model that does little to distinguish between cyber and traditional aggression is appealing in that it removes the necessity of considering cyber aggression a “special” type of aggression. However, the model that included the group factor for cyber-aggression fit better, and made better conceptual sense.

The major focus of this research was to map out the manner in which traditional and cyber-aggression both overlap and are distinguishable from each other. While most of the evidence I have provided so far has indicated a strong degree of overlap, the comparison of model 16 and 17 helps us distinguish the ways in which they diverge. One cannot avoid the fact that there are differences between traditional and cyber aggression. Though not necessarily so, cyber-aggression can be carried out anonymously. Also, the perpetrator is unable to witness the victim’s reaction. Suler’s study (2004) displayed evidence that the de-individuation experienced when communicating via cyber-means has the potential to alter one’s behavior. Additionally, cyber-aggression requires the perpetrator to have some degree of expertise in using CMC, and one certainly cannot engage in cyber-aggression if they do not possess the means to do so. Future research could potentially target the effect of perceived de-individuation for cyber-aggressors.

These hierarchical models both provide excellent evidence that cyber-aggression is a function of general aggression, and that many behaviors carried out by cyber-means

are very similar to those that are not. Cyber behaviors that are verbal or relational in nature are so similar that they share common factors with analogous traditional behaviors. However, there are qualities unique to cyber-aggression that distinguish it from traditional aggression. Therefore, the nested hierarchical model that included factors for physical, verbal, relational, and picture bullying, plus a group factor for cyber aggression is perhaps the best. This model decisively demonstrated that both cyber and traditional aggression are intertwined, while it also acknowledged that there are at least some aspects unique to cyber-aggression. Additionally, it demonstrated that all examples of aggression, whether cyber or traditional, are a function of general aggressive tendencies.

Cyber-aggression as inherently relational in nature

Willard (2007) and Hinduja and Patchin (2008) hypothesized that cyber-aggression is inherently relational in nature. The models displayed in Figure 7 and Figure 9 provided convincing evidence of this hypothesis.

The model in Figure 7 was a bi-factor model that included group factors of picture-based and direct text-based aggression, allowed all other items to load on a general factor of cyber-aggression, and displayed excellent fit to the item data. The model in Figure 9 was a hierarchical model, and the first order factor for relational cyber-aggression had a very strong relationship with the second order factor of general cyber-aggression. The factor loading connecting the general factor to the relational factor was so high, in fact, that it exceeded 1.0.

Taken collectively, these pieces of evidence indicate that cyber-aggression is highly relational in nature. Over half of the cyber-aggression items were best accounted

for by a general factor of cyber-aggression, which in turn, had an exceedingly strong relationship to forms of cyber-aggression I identified as relational. While I was able to identify specific sub-types of cyber-aggression, models 7 and 9 provide convincing evidence that in general, cyber-aggression is closely linked to relational aggression.

Uniqueness of questionnaire

Through my examination of a variety of models that combined items representing cyber and traditional aggression, I demonstrated that cyber-aggression should not be considered a discrete category among aggressive behaviors. There is great overlap among aggressive behaviors carried out by both cyber and traditional means, and I have found evidence that some cyber behaviors have analogous traditional behaviors that share group factors. My ability to find this evidence was largely attributable to the design of my questionnaire, which conceptualized cyber-aggression behaviors as direct, relational, or picture. Rather than focus on modalities by creating items to target each medium one might use to perpetrate a behavior (text, emails, Facebook, etc.) I instead developed my items to focus on the type of behavior itself (i.e. calling someone a mean name or spreading a rumor to hurt someone's feelings) by including all cyber modalities in a set of parentheses embedded into each item.

I developed my items based on the behaviors identified by Willard (2007) (flaming, harassment, denigration, stalking, masquerading, and outing) and later authors (i.e. Menesini, Nocentini, and Colussi, 2011) who brought attention to the unique nature of picture aggression. These behaviors cut across multiple modalities, and have been used frequently in the literature to describe cyber-aggression's content domain. Though many have focused on modality, I found no evidence in past research to suggest that there are

distinguishing features particular to a “text perpetrator” or a “Facebook perpetrator.”

Therefore, I regarded modality as a nuisance factor and eliminated its examination from my research. It was a relatively simple task to sort the behaviors identified in the literature into the categories of direct, relational, and picture aggression. In this manner I was able to create a scale that could accommodate the possibility of shared group factors for both cyber and traditional items.

Overall, my instrument was successful in that I was able convert cyber aggression’s content domain into a set of items which allowed me to not only conceptualize a shared framework for cyber and traditional aggression, but also identify cyber behaviors that can be grouped together categorically with certain traditional behaviors.

Summary and conclusion

The evidence I have discovered leaves little question that cyber and traditional aggression exist within the same framework, to the extent that many behaviors carried out by way of both traditional and cyber-means can be combined into shared groups. While past research has conceived of cyber aggression as a category distinct from others, I have defined models that more accurately conceptualize the relationship between cyber and traditional aggression. Based on the overall results in my study, researchers should cease separating cyber-aggression from other forms of aggression, but rather view it as an extension of them. To consider cyber-aggression items in isolation is deceptive; continuing to do so will limit researchers’ ability to draw valid inferences regarding cyber-aggression and result in misleading conclusions.

Although I did find evidence that suggested there are some unique aspects to cyber-aggression, this evidence was discovered within the context of a nested hierarchical model in which cyber-aggression was combined with equivalent forms of traditional aggression. A conceptual model that accounts for cyber-aggression's unique variance perhaps best describes the manner in which cyber and traditional aggression coexist within a general framework. They are inextricably related and even share categories (i.e. verbal and relational), though are not completely indistinguishable from one another.

A great deal of this research's success is attributable to the way the questionnaire was developed. With the input of the target population, I designed items that considered cyber-aggression behaviors to be analogous to traditional ones, and more importantly, did not treat cyber-aggression items with the *a priori* notion that they comprise a factor separate from other forms of aggression. Additionally, rather than focusing on modalities such as "email" or "Facebook", I considered these "nuisance factors" and avoided them when developing my items, instead combining various modalities into the same item by including them within parentheses. The specific modalities are likely irrelevant to the underlying construct, and additionally, are likely to change very rapidly as technology advances. Further researcher should continue to conceptualize cyber aggression more broadly as "direct" or "relational" etc.

My overall evidence suggests that all forms of aggression are a function of general aggressive tendencies; one who is more aggressive in general is more likely to engage in any form of aggression, be it traditional or cyber. Additionally, my models displayed evidence that in terms of direct verbal and relational aggression, one who in particular engages in the traditional versions of these behaviors is likely to engage in the

cyber versions as well. Cyber-aggression has unique characteristics, but is best conceptualized as integrated with traditional aggression within a shared general framework.

Directions for future research

Investigation of broader populations. In the present study, I sampled a single middle school in a low SES industrial town. While I successfully fit combined models to data collected from this particular group of children, one must remain cautious in regards to generalizing these findings. A next step would be to present the questionnaire to groups of students who represent other populations (i.e. high school students, middle school students from higher SES areas etc.). Once this is accomplished we can conclude with a greater degree of confidence that the patterns of behavior observed in the present study can be generalized across students from a variety of age groups and social milieus.

Adjustment of timeframe. For the present study we collected our data mid-year. In order to engender a response patter with as much variance as possible, we asked participants to consider their behavior over the course of the past year. Asking participants to recall their actions over such a long period of time may limit the reliability of their responses. At the end of the year, I gathered the focus group together again and asked them some general questions about the aggressive behaviors of their peers. They unanimously agreed that cyber-aggression had increased markedly in latter part of the school year. In the future, it may be advisable to administer my survey at the conclusion of the school year and present the students with a shorter timeframe in which to recall activity. Such an approach may serve to increase both accuracy and variance in regards to the subjects' responses.

Online presentation of questionnaire. The extent to which students answered the questionnaire truthfully is also an important question. In the focus group, many of the participants expressed doubt as to whether other students would respond honestly for fear of being discovered and punished. The focus group participants claimed that their fellow students would answer more honestly if given a survey in an online format. They believed such a presentation would seem “more anonymous” and would therefore result in more accurate (and aggressive) responses. This is consistent with the theory that an online medium grants a person a sense of de-individuation (Suler, 2004). A possible future study could be conducted to compare the responses of students in matched schools. One group would receive an online survey, and the other would receive a paper-based version. It would be interesting to see if students in the online group would more frequently admit to perpetrating aggressive acts.

Improvement of questionnaire. My questionnaire was successful, but there are always methods of improvement. For the present study, related items were grouped together (i.e. all items that addressed overt text-based aggression were grouped together, all items that addressed relational cyber-aggression were grouped together, etc.) This might have inflated covariance among grouped items. In future administrations, the order of items should be randomized.

Exploration of aggression severity. The present study has revealed evidence in support of a model framework that contains four categories that address both cyber and traditional aggression: physical, verbal/direct text, relational/relational text, and picture. While there were a handful of items that were better accounted for by a general factor of

aggression and did not neatly fit into a discrete group, a four group factor model did well to account for the majority of our items.

Some of the behaviors that did not neatly fit into our four categories required a series of sustained intentional actions. Forcing someone to do something against his or her will, stealing or vandalizing somebody's property, impersonating another individual online to ruin that person's image, and disseminating personal information given in confidence online all are complex behaviors that may represent a category of particularly aggressive behavior. During the focus group, many of the student expressed alarm when reading these items. While they reluctantly admitted to each other, the principal, and the researcher, that they had engaged in many of the behaviors listed on the questionnaire, all expressed the sentiment that they would never go so far as to commit certain aggressive acts. In particular they seemed to single out picture- based aggression and divulging information given in confidence as the most deviant.

A possible preliminary follow up study would be to give students a questionnaire containing the same items, but asks respondents to rate each behavior's severity rather than to indicate how often they performed each behavior. An exploratory factor analysis could be employed to examine how students categorize aggressive behaviors in terms of severity.

Another method that could be used to investigate severity is item response theory (IRT). Menesini, et. al. (2011), analyzed their sample's responses by way of IRT, and discovered that among examples of cyber-aggression, the perpetration of picture-based behaviors discriminated the severely aggressive respondents from more mild ones. Individuals who admitted to engaging in picture-aggression were more likely to have

engaged in all other forms of aggression than those who had not. Mensini et.al.'s survey did not include masquerading and outing behavior; it would be illuminating to investigate if these, as well as certain traditional aggression behaviors, also discriminate between severely and mildly aggressive individuals.

Cyberbullying

The present research focused on cyber-aggression because the extent literature has done little to differentiate between cyber-aggression and cyberbullying. As I have discussed throughout this research, in order for an aggressive behavior to be considered bullying, it must meet three criteria: imbalance of power, repetition, and perpetration over time. Most research examining cyberbullying has not explicitly attempted to distinguish cyberbullying by way of these criteria. Many researchers have argued that cyber-aggression is inherently bullying because power imbalances and repetition are inherent to aggressive acts carried out by way CMC.

While it may be an overgeneralization to consider all acts of cyber-aggression to be considered bullying, the observation that cyber-aggression's potential ubiquity and anonymity lead to severe consequences is not without merit. Harmful pieces of information or images that rapidly spread throughout an online community can be devastating to a targeted individual. They are inescapable and virtually impossible to eliminate. Certainly, aggressive acts carried out by way of posting to social media will likely become self-perpetuating, meeting the criteria of repetition over time.

Cyber-aggression has a high potential to become true bullying. A next step for researchers is to make a concerted effort to distinguish cyberbullying from general cyber-aggression. Longitudinal studies examining aggressors and victims over time may be the

best way to identify true cyberbullies. Employing this type of research design would allow the researcher to identify perpetrators who target individuals repeatedly, and also allow us to examine what types of cyber-aggression they are most likely to use.

Explorations of perceived anonymity and de-individuation

Past research has provided evidence that the majority of cyber-aggression victims do know the identity of the perpetrator. That does not mean, however, that the perpetrator carried out the act without the *perception* that he or she was anonymous. An aggressor may have attempted to carry out the act anonymously, and the victim may have been able to deduce the identity of a perpetrator regardless of whether the perpetrator revealed his or her identity when carrying out the aggressive act. Therefore, it is possible that many perpetrators of cyber-aggression commit their actions with a sense of de-individuation, a factor that has been strongly associated with CMC based communication (Suler, 2004).

The focus of the present research was to map out the manner in which cyber and traditional aggression overlap and diverge. While my study yielded strong evidence of overlap, it also demonstrated that there are differences between the two. The experience of de-individuation may be the factor that most decisively separates cyber and traditional aggression.

Perceived de-individuation has been linked to radical increases in individuals' perpetration of antisocial behaviors (Zimbardo, 1970), as it results in decreased empathy and a decreased sense of accountability for the perpetrator. Indeed, past research has shown that individuals experience less empathy when perpetrating aggression by way of CMC (Hinduja & Patchin, 2008). Once researchers are able to identify true cyber-bullies,

follow up studies that target these individuals' sense of de-individuation may allow us to better understand the psychological profile of a cyberbully.

Retaliation. Our questionnaire included two items that addressed retaliation: one inquired as to whether an individual had used cyber means as a method to retaliate against an offense experienced in the real world, and the other questioned whether one had used CMC to retaliate against an offense experienced online. Future studies may want to address whether retaliators prefer certain types of cyber aggression to others, and whether there are different preferred means for those who seek to retaliate against real world perpetrators vs. cyber perpetrators.

Gender and Age differences. The present study identified several groups of cyber aggression; we found that picture aggression can be conceptualized as a discrete category of aggression, and that, to a considerable extent, direct and relational text-based aggression are analogous to traditional equivalents. While a relational text-based aggression factor did not emerge from the bi-factor model examining cyber-aggression in isolation, when combined with traditional behaviors, these behaviors coalesced into a discrete group. Early explorations of the relationship between gender and traditional aggression often found that male students were more likely to engage in physical aggression, and that male and female students were equally verbally aggressive. Some studies yielded evidence that female students more often engaged in relational aggression, though others were inconclusive.

I discussed in my literature review that the content domain of cyber-aggression has been inconsistently measured across past studies. Some researchers used questionnaires that contained more direct cyber behaviors, while others concentrated on

those behaviors that may be conceived of as indirect or relational in nature. In developing our questionnaire, I made an effort to represent the entire content domain of cyber aggression. Now that I have identified categories for cyber-aggression and displayed structural invariance across genders, the next step may be to examine the difference in latent means across gender for the various categories of cyber aggression. For example, we might find that male students are more likely to engage in picture aggression, female and male students are equally likely to engage in direct text-based aggression, and female students are more likely to perpetrate acts of relational text-based aggression. Additionally, we may explore the effects of age on the various categories of cyber-aggression in a like manner. Now that we have identified categories of cyber-aggression, we are in a better position to examine correlates and predictors.

Tables and Figures

Table 1
Percent of sample engaging in various modalities of CMC use per day

	Never	1 minute to 2 hours	1-2 hours	2-3 hours	More than 3 hours
Talking on a cell- phone	18.3	53	12.7	6.9	9.2
Sending texts	19.9	17.5	13.4	13.4	35.8
Browsing the Internet	8.9	21.3	19.7	15.7	34.4
Sending email	71.4	17.7	4.2	3.8	2.9
Using chatrooms	63.5	15.6	9.6	4.0	7.4
Using messenger	57.7	16.3	8.7	7.1	10.3
Using social media like Facebook	20.6	18.8	15.2	11.8	33.6

Note. $N = 553$.

Table 2

Percent of Sample Engaging in Modalities of CMC Use Per Day by Grade and Gender

	Never	1 minute to 2 hours	1-2 hours	2-3 hours	More than 3 hours
6th grade boys^a					
Talking on a cell-phone	30.9	46.8	12.8	4.3	5.3
Sending texts	37.2	20.2	17.0	9.6	16.0
Browsing the Internet	14.9	25.5	21.3	17.0	21.3
Sending email	73.4	16.0	4.3	4.3	2.1
Using chatrooms	61.7	13.8	8.5	4.3	11.7
Using messenger	61.7	16.0	8.5	7.4	6.4
Using social media like Facebook	33.0	20.2	11.7	13.8	21.3
6th grade girls^b					
Talking on a cell-phone	22.0	50.5	12.1	7.7	7.7
Sending texts	24.2	18.7	15.4	19.8	22.0
Browsing the Internet	17.6	31.9	19.8	15.4	15.4
Sending email	74.7	16.5	2.2	5.5	1.1
Using chatrooms	74.7	7.7	8.8	5.5	3.3
Using messenger	70.3	11.0	7.7	4.4	6.6
Using social media like Facebook	37.4	23.1	14.3	9.9	15.4
7th grade boys^c					
Talking on a cell-phone	18.2	58.0	9.1	9.1	5.7
Sending texts	19.3	22.7	18.2	14.8	25
Browsing the Internet	4.5	26.1	20.5	19.3	29.5
Sending email	71.6	19.3	3.4	1.1	4.5
Using chatrooms	65.9	18.2	10.2	2.3	3.4
Using messenger	63.6	15.9	4.5	6.8	9.1
Using social media like Facebook	14.8	21.6	21.6	17.0	25.0
7th grade girls^d					
Talking on a cell-phone	9.9	47.3	18.7	8.8	15.4
Sending texts	13.2	8.8	8.8	12.1	57.1
Browsing the Internet	5.5	14.3	19.8	16.5	44.0
Sending email	70.3	20.9	3.3	2.2	3.3
Using chatrooms	64.8	13.2	13.2	2.2	6.6
Using messenger	52.7	18.7	8.8	9.9	9.9
Using social media like Facebook	15.4	15.4	16.5	7.7	45.1

*(Table 2 continues)*Note. ^an = 94, ^bn = 92, ^cn = 88, ^dn = 91.

(Table 2 continued)

Percent of Sample Engaging in Various Modalities of CMC Use Per Day by Grade and Gender

	Never	1 minute to 2 hours	1-2 hours	2-3 hours	More than 3 hours
8th grade boys^e					
Talking on a cell phone	22.0	58.5	7.3	2.4	9.8
Sending texts	20.7	24.4	8.5	15.9	30.5
Browsing the Internet	4.9	17.1	20.7	4.9	52.4
Sending email	67.1	18.3	4.9	6.1	3.7
Using chatrooms	62.2	18.3	9.8	3.7	6.1
Using messenger	61.0	13.4	7.3	4.9	13.4
Using social media like Facebook	12.2	20.7	14.6	9.8	42.7
8th grade girls^f					
Talking on a cell-phone	7.6	58.1	15.2	7.6	11.4
Sending texts	5.7	12.4	12.4	9.5	60.0
Browsing the Internet	4.8	13.3	17.1	20.0	44.8
Sending email	70.5	16.2	6.7	3.8	2.9
Using chatrooms	53.3	21.9	7.6	5.7	11.4
Using messenger	39.0	21.9	14.3	8.6	16.2
Using social media like Facebook	10.5	13.3	13.3	11.4	51.4

Note. ^en = 83, ^fn = 105.

Table 3
Traditional aggression items by group factor

Overt aggression

Physical aggression

How often have you punched, kicked, or shoved another student in a mean way?

How often have you done something to embarrass or humiliate someone in front of other people?

How often have you forced someone to do something they didn't want to do?

How often have you taken away, stolen, or otherwise damaged somebody else's property?

Verbal aggression

How often have you called someone mean names to make them feel bad?

How often have you teased someone in a hurtful way?

How often have you made fun of someone to make them feel bad?

Relational aggression

How often have you spread rumors about someone whether they were true or not so people wouldn't like them?

How often have you made fun of someone behind their back so that people wouldn't like them?

How often have you excluded another student from a group to make them feel bad?

How often have you tried to get others to exclude someone to hurt that person's feelings?

How often have you ignored someone to hurt their feelings?

Table 4

Means and Standard Deviations for Traditional Aggression Items Across Gender and Grade

	6 th grade				7 th grade				8 th grade			
	Boys ^a		Girls ^b		Boys ^c		Girls ^d		Boys ^e		Girls ^f	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
V15	1.52	1.02	1.49	.97	1.72	1.01	1.98	1.13	1.92	1.29	2.23	1.27
V16	1.50	.97	1.38	.87	1.60	.93	1.92	1.16	1.80	1.30	1.93	1.21
V17	1.41	1.00	1.28	.76	1.49	.88	1.75	1.08	1.74	1.18	2.02	1.32
V18	1.36	.91	1.22	.53	1.33	.72	1.57	.98	1.57	1.23	1.63	1.01
V19	1.29	.67	1.35	.69	1.47	.87	1.93	.96	1.89	1.28	2.14	1.23
V20	1.46	1.07	1.37	.83	1.53	.99	1.86	1.13	1.72	1.08	2.09	1.20
V21	1.41	.77	1.37	.80	1.50	.73	1.73	1.01	1.63	1.18	1.83	1.17
V22	1.26	.70	1.41	.97	1.45	.98	1.63	1.03	1.54	1.01	1.60	1.03
V23	1.18	.73	1.10	.42	1.25	.73	1.33	.67	1.41	1.05	1.51	1.03
V24	1.09	.48	1.07	.45	1.16	.52	1.22	.68	1.33	.85	1.23	.72
V25	1.04	.25	1.09	.53	1.17	.59	1.20	.61	1.37	1.01	1.29	.72
V26	1.14	.58	1.12	.49	1.18	.67	1.26	.73	1.29	.88	1.30	.80
V27	1.12	.55	1.15	.59	1.15	.47	1.27	.68	1.34	.91	1.27	.75
V28	1.29	.85	1.15	.51	1.30	.82	1.26	.70	1.56	1.04	1.46	1.00
V29	1.20	.76	1.11	.48	1.43	.85	1.32	.61	2.22	1.32	1.52	.87

Note. ^a*n* = 94, ^b*n* = 92, ^c*n* = 88, ^d*n* = 91, ^e*n* = 83, ^f*n* = 105.

Table 5
Cyber aggression items by group factor

Overt cyber aggression

Picture (physical) aggression

- How often have you sent someone a picture or video to threaten or embarrass them by using social media or a computer?
- How often have you sent someone a picture or video to threaten or embarrass them by using a cell phone?
- How often have you spread around an embarrassing picture or video of someone by using social media on the Internet?
- How often have you spread around an embarrassing picture of someone by using a cell phone?

Direct text (Verbal) aggression

- How often have you called someone mean names by using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram etc.) to make them feel bad?
- How often have you teased someone in a hurtful way with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
- How often have you made fun of someone directly in order to hurt their feelings with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?

Relational text aggression

- How often have you spread rumors about someone by using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
 - How often have you made fun of someone behind their back using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
 - How often have you ignored someone online to hurt their feelings?
 - How often have you excluded someone from an online group or activity?
 - How often have you used technology or social media (texts, emails, messaging, Facebook, Instagram etc.) to try to get others to exclude someone you don't like?
 - How often have you threatened someone some using technology or social media (texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
 - How often have you pretended to be another person when online in order to make that person look bad?
 - How often have you revealed information using social media about a person that they didn't want people to know about?
-

Table 6
Means and Standard Deviations for Cyber Aggression Items Across Gender and Grade

	6 th grade				7 th grade				8 th grade			
	Boys ^a		Girls ^b		Boys ^c		Girls ^d		Boys ^e		Girls ^f	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
V30	1.81	1.07	1.45	.87	1.95	1.25	1.73	1.09	2.09	1.24	1.91	1.21
V31	1.66	.99	1.34	.62	1.83	1.04	1.85	1.03	1.56	.98	2.23	1.21
V32	1.32	.72	1.32	.77	1.55	.90	1.48	.64	1.56	.98	1.84	1.03
V33	1.45	.96	1.22	.55	1.51	.96	1.44	.87	1.66	1.09	1.70	1.15
V34	1.63	.93	1.45	.81	1.68	.95	1.90	1.08	2.02	1.21	2.39	1.27
V35	1.64	1.04	1.43	.92	1.70	1.02	1.76	.99	2.12	1.35	2.21	1.28
V36	1.56	1.01	1.36	.77	1.65	.99	1.78	1.04	2.06	1.38	2.23	1.26
V37	1.30	.73	1.30	.71	1.34	.99	1.76	1.08	1.55	1.15	1.72	1.11
V38	1.35	.86	1.33	.70	1.35	.68	1.80	1.08	1.71	1.24	1.89	1.16
V39	1.33	.80	1.26	.54	1.58	.96	1.69	.96	1.67	1.07	1.70	.96
V40	1.26	.72	1.26	.66	1.36	.73	1.42	.72	1.54	1.00	1.61	.89
V41	1.69	1.13	1.55	.85	1.67	.87	1.98	.98	1.87	1.27	2.27	1.37

Note. ^a*n* = 94, ^b*n* = 92, ^c*n* = 88, ^d*n* = 91, ^e*n* = 83, ^f*n* = 105.

Table 7

Factor loadings across genders for constrained bi factor model with picture and physical separate

	Male	female
General		
Aggression		
V15	.59	.59
V16	.60	.61
V17	.62	.61
V18	.75	.69
V19	.69	.66
V20	.63	.64
V21	.52	.53
V22	.66	.62
V23	.68	.67
V24	.68	.69
V25	.61	.67
V26	.65	.57
V27	.71	.65
V28	.75	.76
V29	.78	.71
V30	.73	.64
V31	.85	.82
V32	.77	.74
V33	.65	.71
V34	.70	.75
V35	.76	.80
V36	.79	.78
V37	.83	.75
V38	.88	.80
V39	.74	.75
V40	.79	.72
V41	.68	.76

(Table 7 continues)

(Table 7 continued)

Factor loadings across genders for constrained bi factor model with picture and physical separate

	Male	female
Cyber Aggression		
V15	.48	.48
V16	.59	.60
V17	.57	.56
V18	.38	.35
V19	.37	.35
V20	.29	.30
V21	.35	.36
V22	.43	.40
V23	.48	.48
V24	.41	.42
V25	.23	.30
V26	.39	.34
V27	.18	.16
V28	.32	.32
V29	.35	.32
Physical Aggression		
V30	.63	.56
V31	.12	.11
V32	-.12	-.11
V33	-.01	-.02
Verbal/Text-based		
V15	.38	.38
V16	.37	.37
V17	.43	.42
V23	.17	.17
V34	.44	.47
V35	.42	.45
V36	.41	.41

(Table 7 continues)

(Table 7 continued)

Factor loadings across genders for constrained bi factor model with picture and physical separate

	Male	Female
Relational/Text-based		
V18	.09	.09
V19	.19	.18
V20	.33	.34
V21	.37	.38
V22	.23	.22
V28	-.09	-.09
V29	-.03	-.02
V37	.25	.23
V38	.25	.22
V39	.45	.45
V40	.41	.36
V41	.31	.35
Picture-based		
V24	.37	.38
V25	.54	.58
V26	.54	.48
V27	.68	.62

Table 8

Factor loadings across grades for constrained bi factor model with picture and physical separate

	6 th graders	7 th graders	8 th graders
General			
Aggression			
V15	.55	.58	.56
V16	.61	.60	.59
V17	.58	.61	.60
V18	.76	.71	.69
V19	.63	.66	.62
V20	.71	.66	.62
V21	.52	.60	.52
V22	.62	.70	.66
V23	.67	.65	.65
V24	.73	.76	.65
V25	.55	.62	.69
V26	.58	.59	.59
V27	.73	.64	.75
V28	.79	.72	.85
V29	.80	.73	.71
V30	.65	.67	.60
V31	.80	.81	.81
V32	.79	.60	.79
V33	.79	.55	.67
V34	.64	.68	.69
V35	.77	.75	.76
V36	.78	.76	.75
V37	.76	.77	.75
V38	.84	.80	.81
V39	.75	.73	.71
V40	.85	.75	.71
V41	.74	.80	.68

(Table 8 continues)

(Table 8 continued)

Factor loadings across grades for constrained bi factor model with picture and physical separate

	6 th graders	7 th graders	8 th graders
Cyber Aggression			
V15	.55	.58	.56
V16	.69	.69	.67
V17	.61	.65	.63
V18	.33	.31	.31
V19	.34	.36	.34
V20	.26	.24	.23
V21	.27	.31	.27
V22	.32	.36	.34
V23	.50	.49	.49
V24	.37	.36	.33
V25	.15	.17	.18
V26	.26	.27	.27
V27	.06	.05	.06
V28	.25	.22	.26
V29	.27	.25	.24
Physical Aggression			
V30	.26	.27	.25
V31	.44	.44	.44
V32	-.04	-.03	-.04
V33	-.11	-.08	-.09
Verbal/Text-based			
V15	.28	.30	.28
V16	.24	.23	.23
V17	.31	.33	.32
V23	.14	.13	.13
V34	.52	.55	.56
V35	.47	.46	.47
V36	.47	.46	.46

(Table 8 continues)

(Table 8 continued)

Factor loadings across grades for constrained bi factor model with picture and physical separate

	6 th graders	7 th graders	8 th graders
Relational/Text-based			
V18	.14	.13	.13
V19	.24	.25	.24
V20	.24	.23	.21
V21	.28	.32	.28
V22	.23	.26	.24
V28	-.13	-.16	-.14
V29	.02	.02	.02
V37	.35	.36	.35
V38	.33	.31	.32
V39	.47	.46	.45
V40	.38	.33	.32
V41	.38	.28	.23
Picture-based			
V24	.45	.44	.41
V25	.52	.59	.65
V26	.59	.60	.60
V27	.58	.51	.60

Table 9

Factor loadings across genders for constrained hierarchical model with physical and picture separate

	Male	Female
General Aggression		
Physical	.97	.97
Verbal/Text	.87	.89
Relational/Text	.94	.93
Picture	.81	.75
Physical Aggression		
V30	.71	.70
V31	.86	.85
V32	.77	.79
V33	.71	.69
Verbal/Text-based		
V15	.67	.69
V16	.68	.70
V17	.70	.72
V23	.72	.74
V34	.84	.85
V35	.89	.90
V36	.89	.90
Relational/Text-based		
V18	.75	.71
V19	.73	.69
V20	.73	.69
V21	.63	.59
V22	.71	.67
V28	.76	.72
V29	.75	.71
V37	.84	.81
V38	.89	.87
V39	.85	.81
V40	.84	.81
V41	.81	.78

(Table 9 continues)

(Table 9 continued)

Factor loadings across genders for constrained hierarchical model with physical and picture separate

	Male	Female
Picture-based		
V24	.85	.82
V25	.87	.84
V26	.81	.77
V27	.90	.87
Cyber Aggression		
V15	.51	.50
V16	.63	.61
V17	.61	.56
V18	.37	.39
V19	.33	.35
V20	.25	.26
V21	.29	.30
V22	.38	.40
V23	.47	.46
V24	.39	.43
V25	.26	.29
V26	.35	.38
V27	.18	.20
V28	.34	.36
V29	.34	.37

Table 10

Factor loadings across grades for constrained hierarchical model with physical and picture separate

	6 th graders	7 th graders	8 th graders
General Aggression			
Physical	.97	.95	.96
Verbal/Text	.86	.86	.86
Relational/Text	.95	.94	.93
Picture	.77	.70	.79
Physical Aggression			
V30	.72	.62	.68
V31	.87	.81	.85
V32	.79	.71	.76
V33	.73	.63	.69
Verbal/Text-based			
V15	.65	.65	.65
V16	.67	.67	.67
V17	.69	.69	.69
V23	.71	.71	.71
V34	.82	.82	.82
V35	.89	.89	.89
V36	.89	.89	.89
Relational/Text-based			
V18	.74	.73	.70
V19	.70	.69	.65
V20	.71	.70	.66
V21	.62	.60	.57
V22	.72	.70	.67
V28	.76	.75	.71
V29	.74	.73	.70
V37	.84	.83	.81
V38	.89	.88	.86
V39	.84	.83	.80
V40	.85	.84	.82
V41	.81	.80	.77

(Table 10 continues)

(Table 10 continued)

Factor loadings across grades for constrained hierarchical model with physical and picture separate

	6 th graders	7 th graders	8 th graders
Picture-based			
V24	.86	.84	.87
V25	.85	.83	.86
V26	.79	.75	.80
V27	.92	.90	.92
Cyber Aggression			
V15	.54	.54	.54
V16	.66	.66	.66
V17	.61	.61	.61
V18	.35	.36	.38
V19	.34	.35	.36
V20	.26	.26	.27
V21	.29	.29	.30
V22	.36	.37	.38
V23	.48	.48	.48
V24	.38	.41	.37
V25	.22	.24	.21
V26	.32	.34	.31
V27	.14	.15	.14
V28	.35	.36	.38
V29	.32	.33	.34

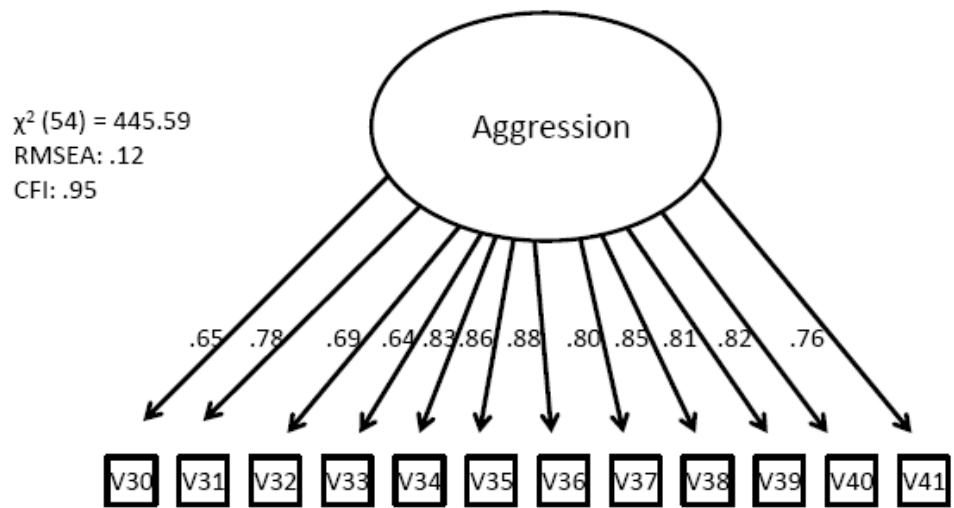


Figure 1. Baseline model for a general aggression factor.

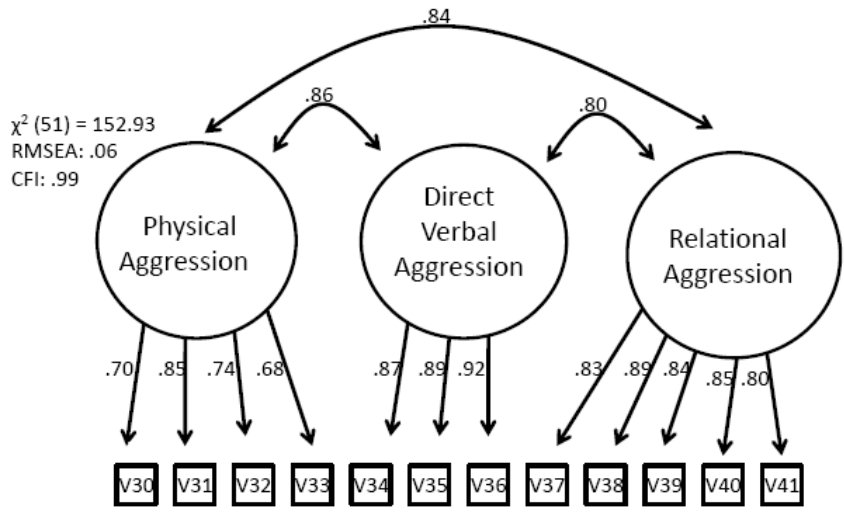


Figure 2. Correlated three factor model for physical and overt verbal and relational aggression

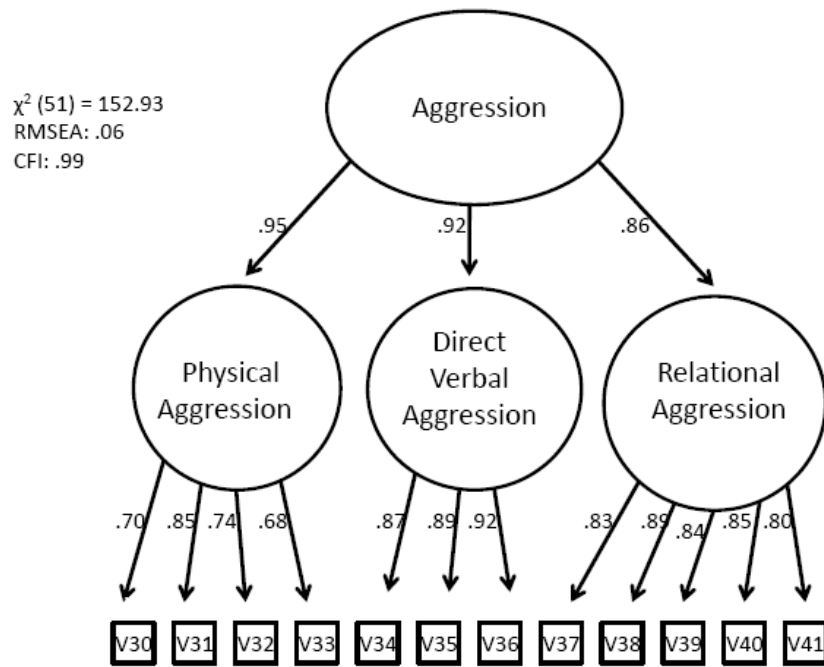


Figure 3. Hierarchical aggression model: Physical, overt verbal and relational aggression

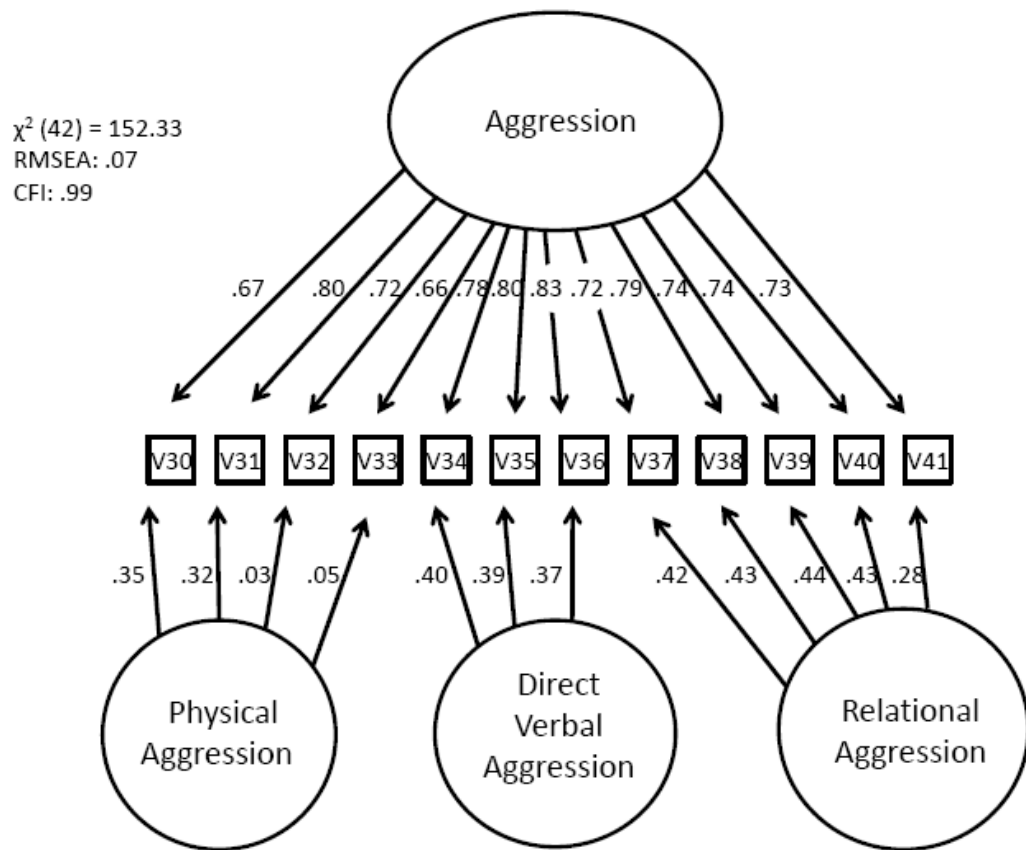


Figure 4. Bi-factor model for aggression with three group factors: Physical, overt verbal, and relational aggression.

$\chi^2(90) = 647.50$
RMSEA: .11
CFI: .93

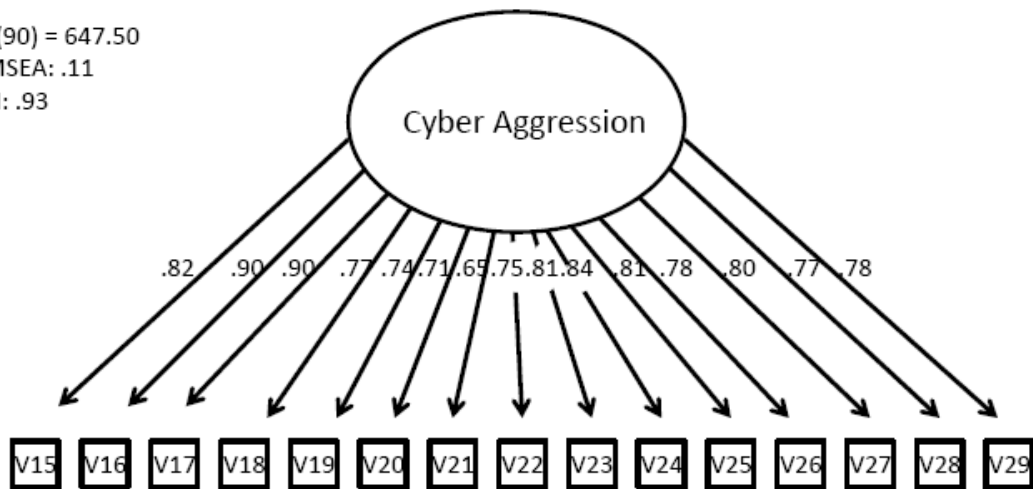


Figure 5. Baseline model for a general cyber aggression factor.

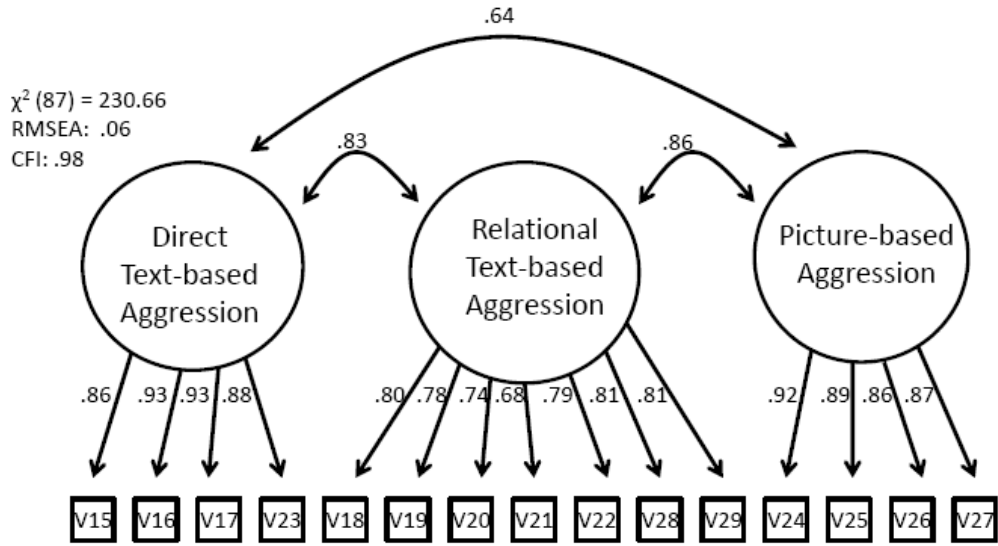


Figure 6. Correlated three factor model for cyber aggression: Overt text, relational text, and picture-based aggression.

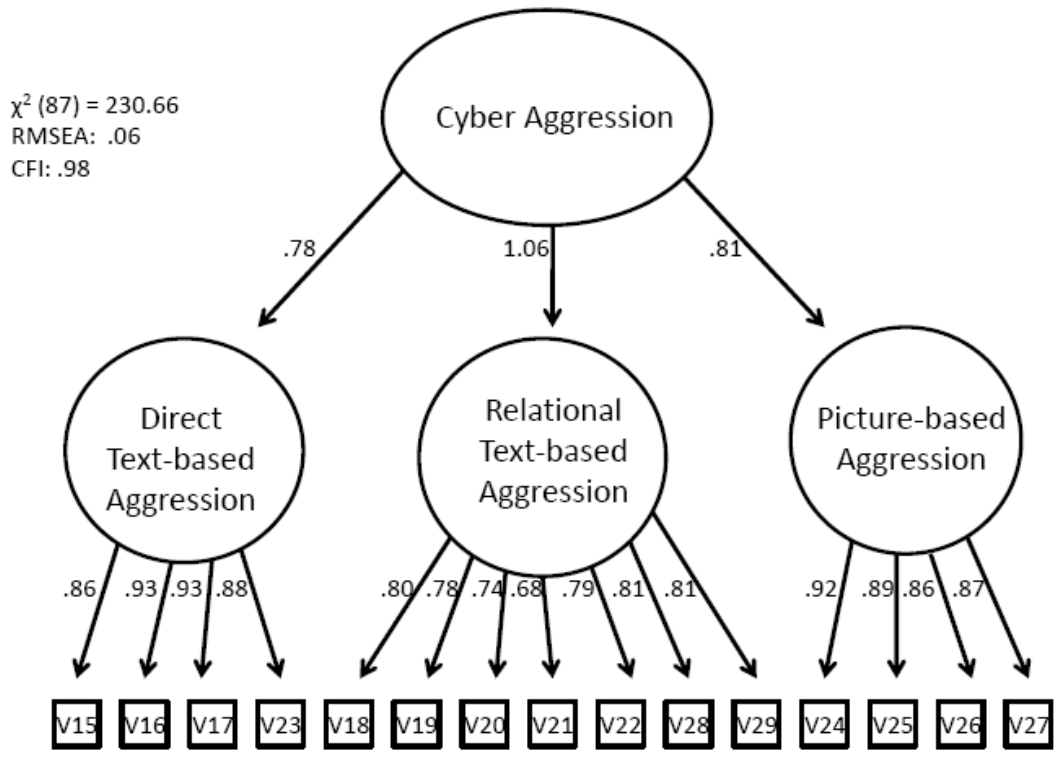


Figure 7. Hierarchical cyber aggression model: Overt text, relational text, and pictured-based aggression.

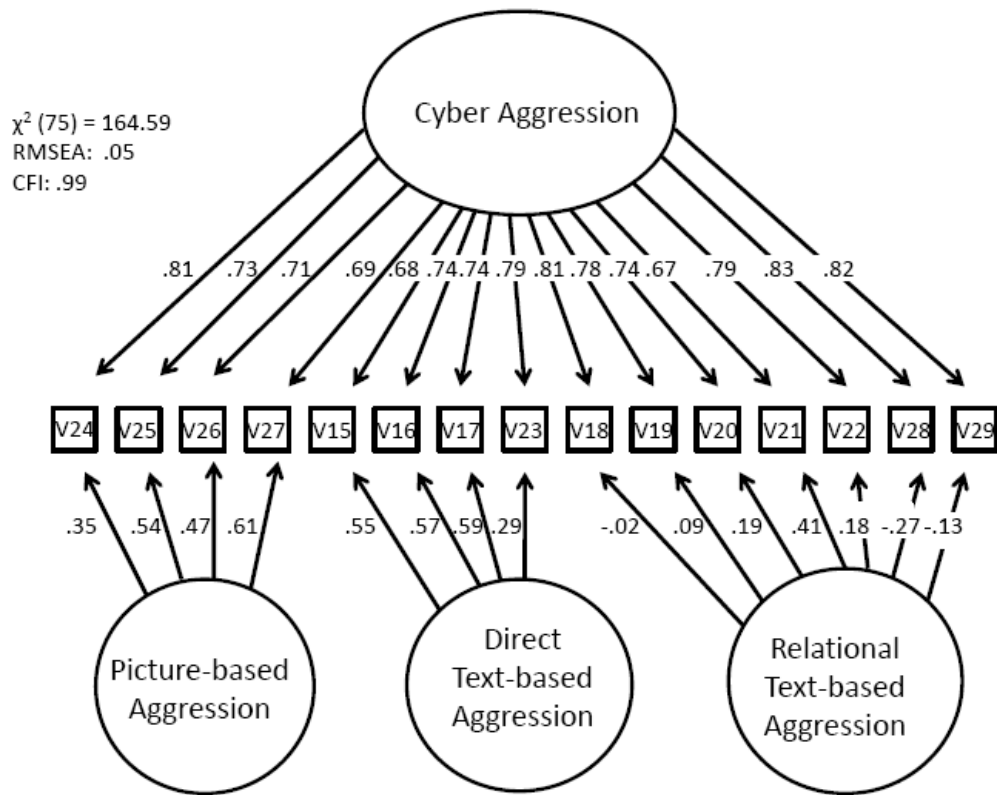


Figure 8. Bi-factor model for cyber aggression with three group factors: Picture-based, overt text-based, and relational text-based cyber aggression.

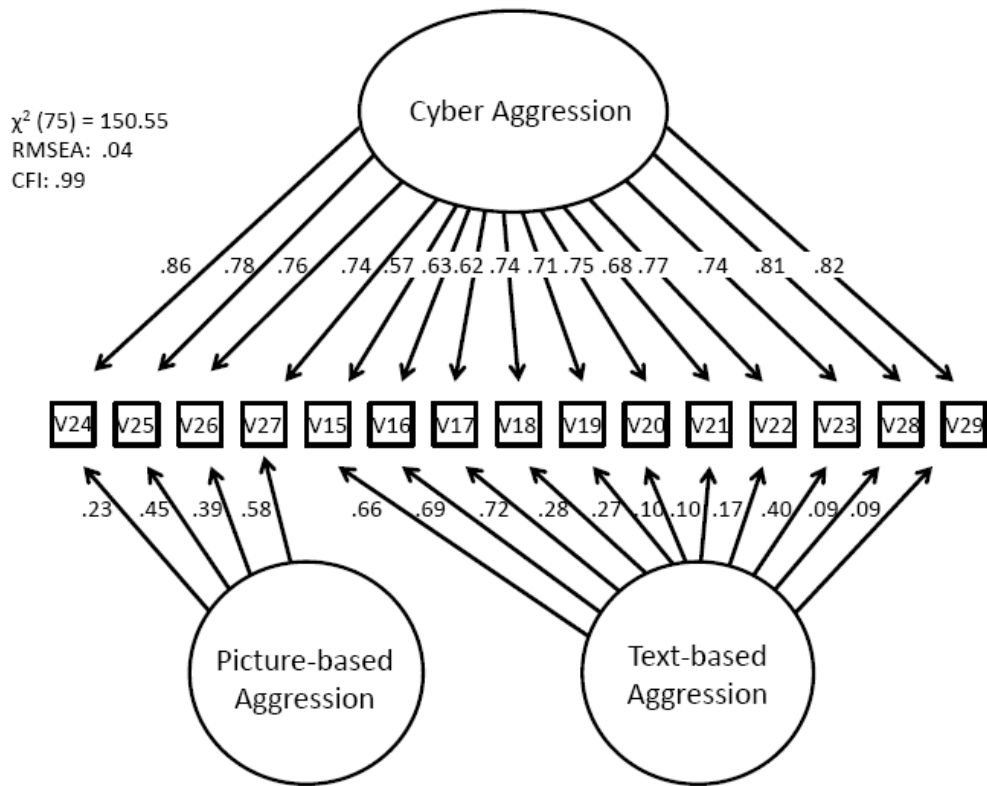


Figure 9. Bi-factor model for cyber aggression with two group factors: Picture-based and text-based aggression.

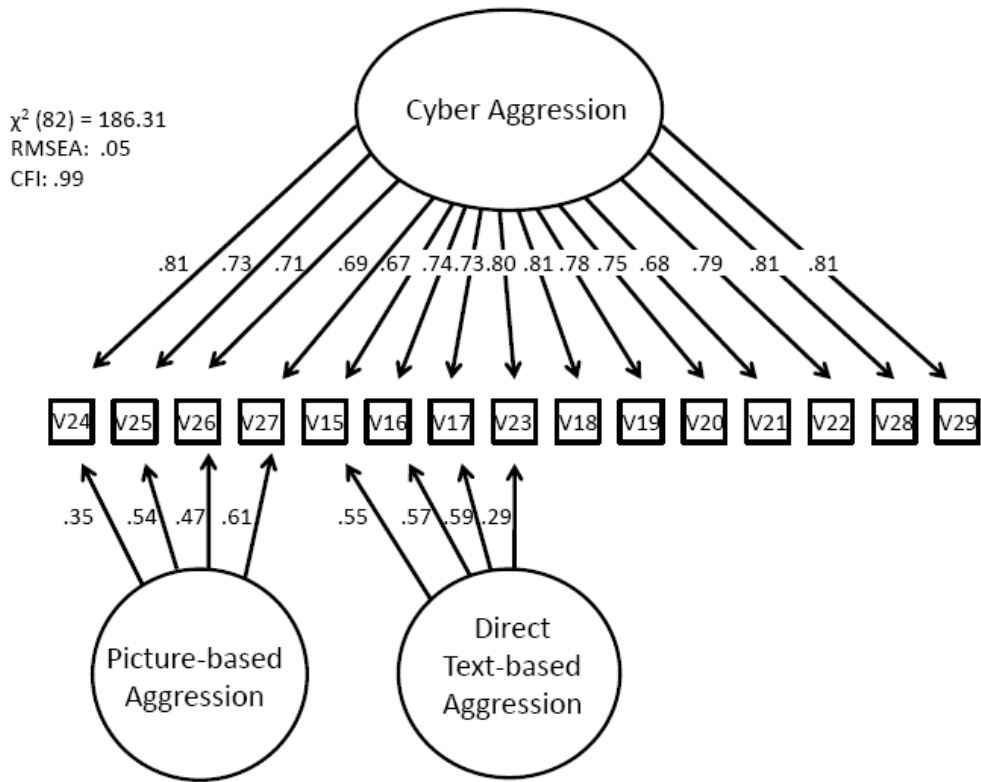


Figure 10. Bi-factor model for cyber aggression with two group factors: Picture and direct text based, relational accounted for by general factor.

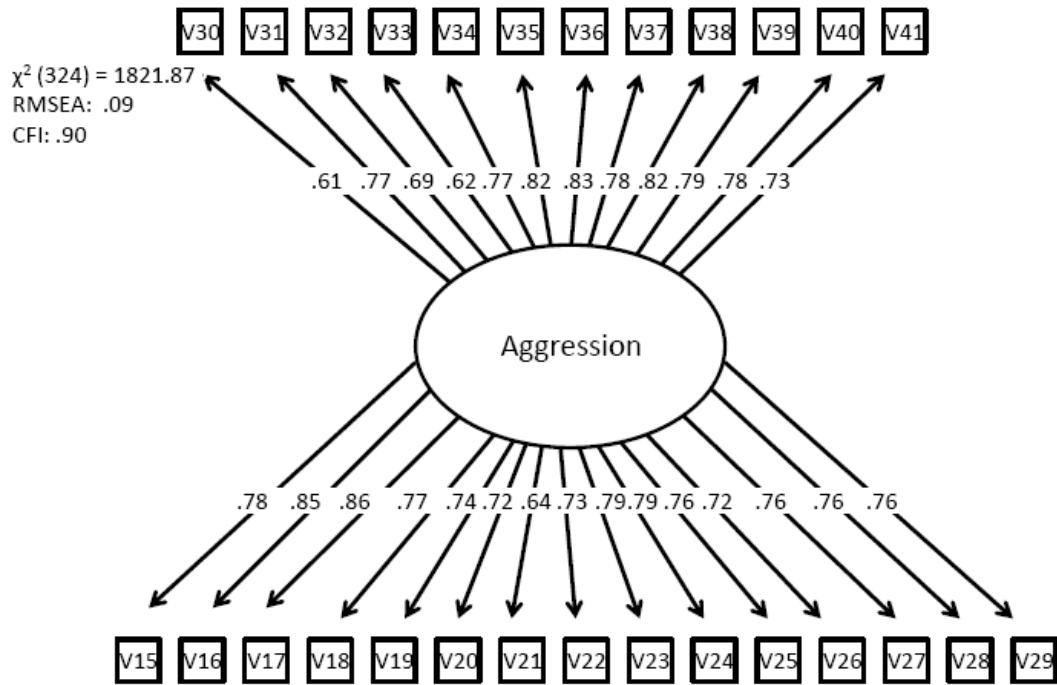


Figure 11. Baseline model for a general aggression factor across measures of both cyber and traditional aggression.

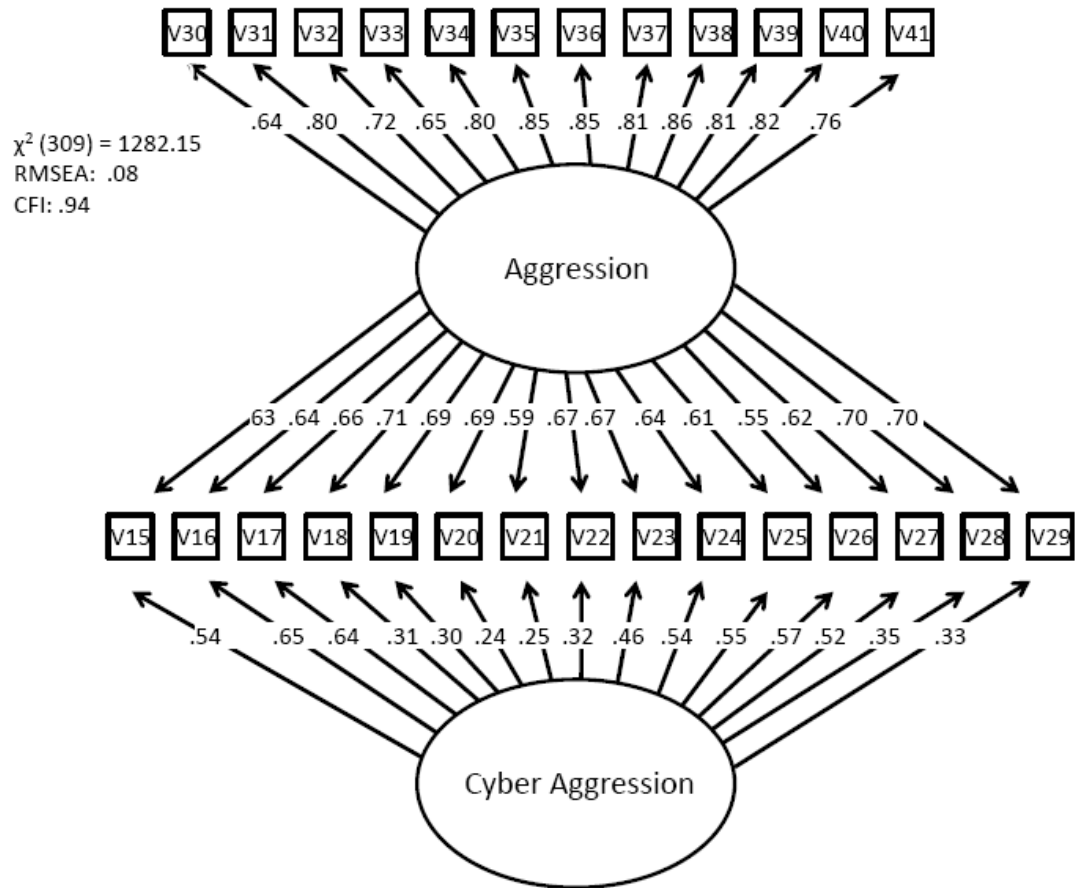


Figure 12. Bi-factor model for general factors of aggression and cyber aggression.

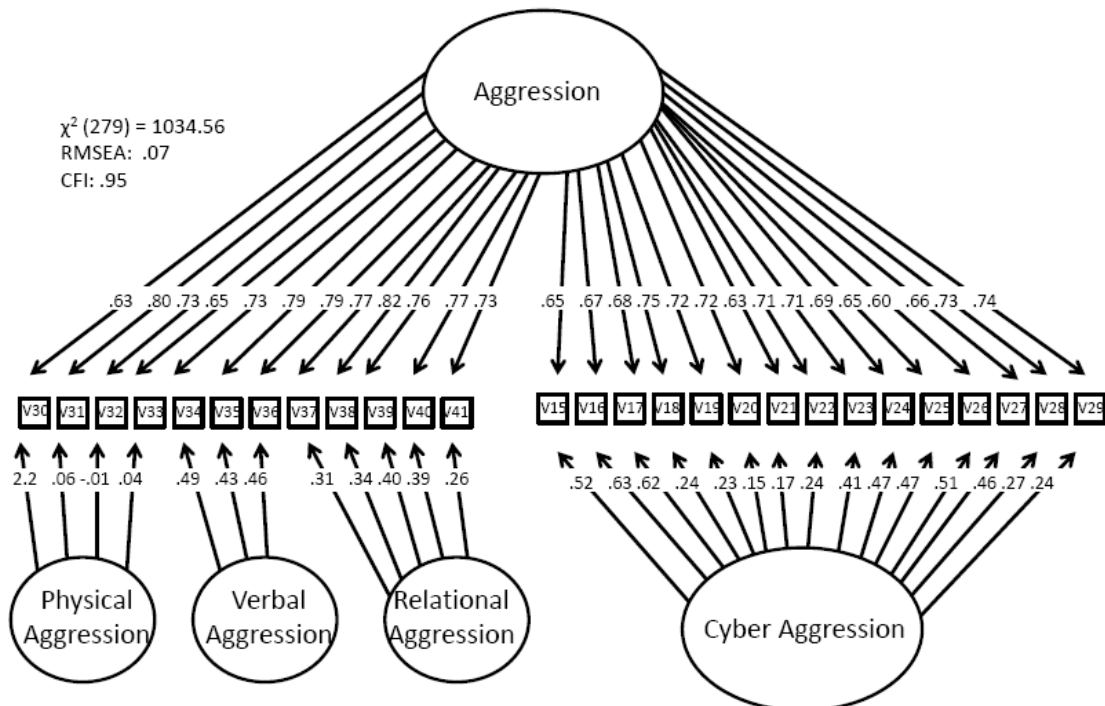


Figure 13. Bi-factor model for aggression with four group factors: Physical, verbal, relational, and cyber aggression.

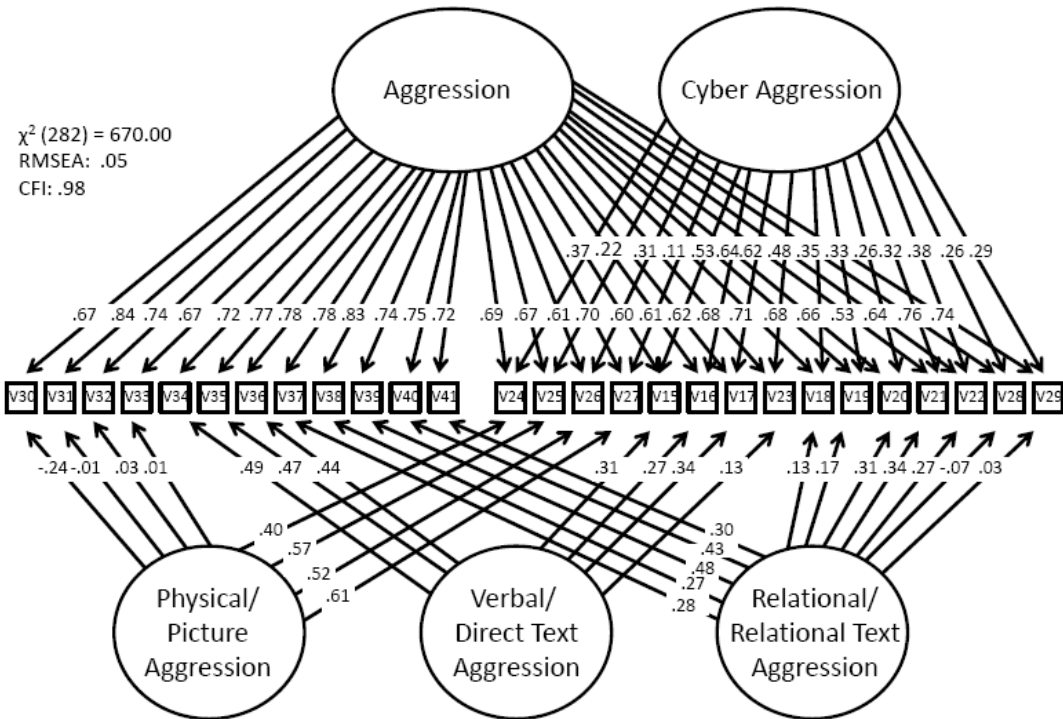


Figure 14. Bi-factor model for aggression and cyber aggression with three group factors: Physical/picture aggression, verbal/overt text aggression, and relational/relational text-based aggression.

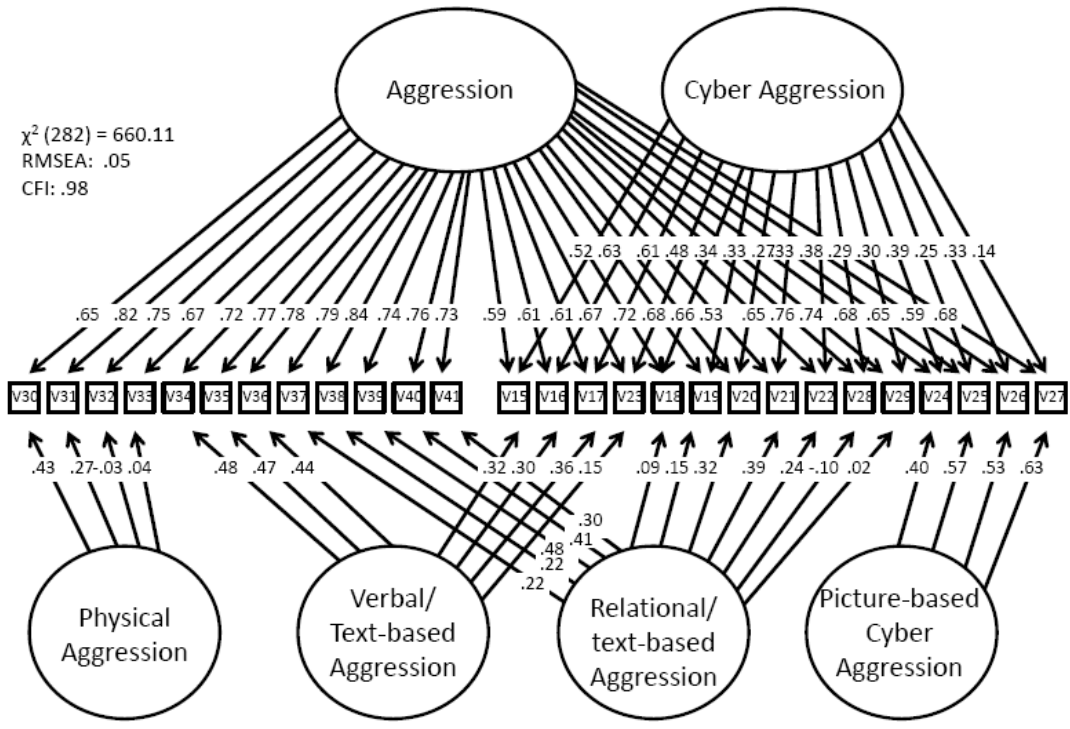


Figure 15. Bi-factor model for aggression and cyber aggression with four group factors: Physical, verbal/text-based, relational/ relational text-based, and picture-based cyber aggression.

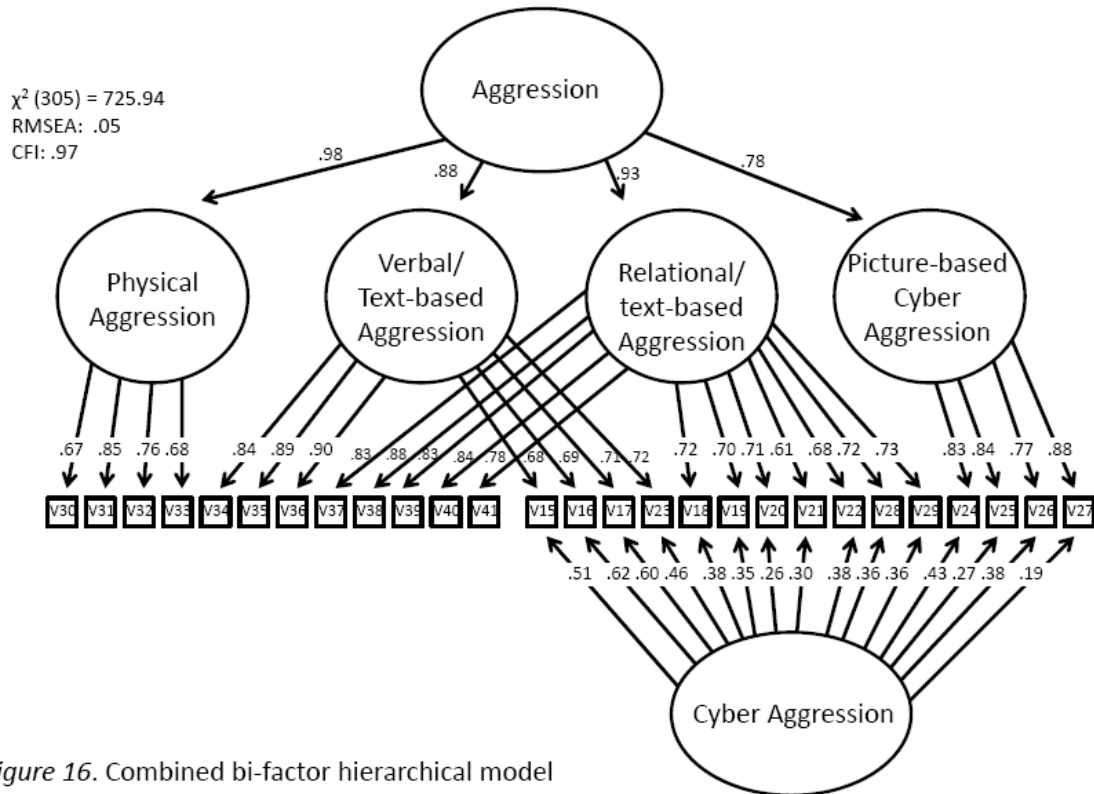


Figure 16. Combined bi-factor hierarchical model for aggression and cyber aggression with four group factors: Physical, verbal/text-based, and relational/text-based, and picture-based cyber aggression.

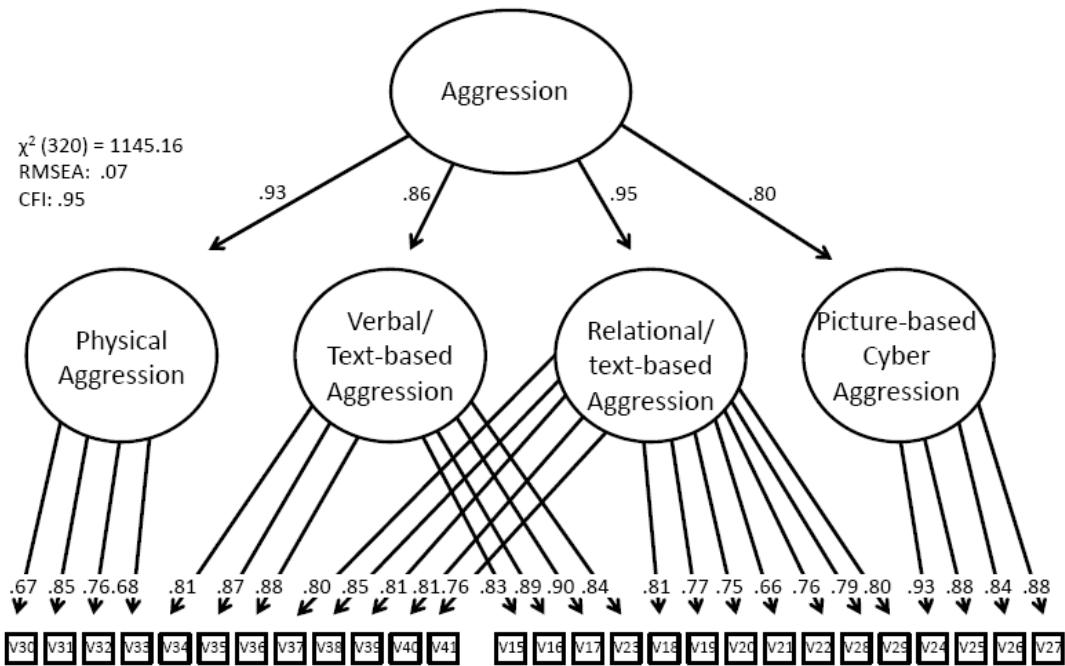


Figure 17. Combined hierarchical model for aggression and cyber aggression with four group factors: Physical, verbal/text-based, and relational/text-based, and picture-based cyber aggression.

References

- Ang, R. P., & Goh, D. H. (2010). Cyberbullying among adolescents: The role of affective and cognitive empathy, and gender. *Child Psychiatry and Human Development, 41*(4), 387-397.
- Ang, R. P., Tan, K., & Mansor, A. (2011). Normative beliefs about aggression as a mediator of narcissistic exploitativeness and cyberbullying. *Journal of Interpersonal Violence, 26*(13), 2619-2634.
- Aricak, T., Siyahhan, S., Uzunhasanoglu, A., Saribeyoglu, S., Ciplak, S., Yilmaz, N., & Memmedov, C. (2008). Cyberbullying among Turkish adolescents. *CyberPsychology & Behavior, 11*(3), 253-261.
- Austin, S., & Joseph, S. (1996). Assessment of bully/victim problems in 8 to 11 year olds. *British Journal of Educational Psychology, 66*, 447-456.
- Baldry, A. C., & Farrington, D. P. (1999). Types of bullying among italian school children. *Journal of Adolescence, 22*(3), 423-426.
- Bauman, S. (2010). Cyberbullying in a rural intermediate school: An exploratory study. *The Journal of Early Adolescence, 30*(6), 803-833.
- Beran T., & Li Q. (2005). Cyber-harassment: a study of new method for an old behavior. *Journal of Educational Computing Research, 32*, 265-77.
- Bjorkqvist K. (1994) Sex differences in physical, verbal, and indirect aggression: A review of recent research. *Sex Roles, 30*, 177-88.
- Bjorkqvist K, Lagerspetz KMJ, Kaukiainen A. (1992). Do girls manipulate and boys fight? *Aggressive Behavior 18*, 117-127
- Borg, M. G. (1998). The emotional reaction of school bullies and their victims. *Educational Psychology, 18*(4), 433-444.
- Bosworth, K., Espelage, D. K., & Simon, T. (1999). Factors associated with bullying in middle-school students. *Journal of Early Adolescence, 19*, 341-362.
- Burgess-Proctor, A., Patchin, J. W., & Hinduja, S. (2008). Cyberbullying and online harassment: Reconceptualizing the victimization of adolescent girls. In V. Garcia & J. Clifford (Eds.), *Female Crime Victims: Reality Reconsidered* (162-176). Upper Saddle River, NJ: Prentice-Hall.

- Calvete, E., Orue, I., Estévez, A., Villardón, L., & Padilla, P. (2010). Cyberbullying in adolescents: Modalities and aggressors' profile. *Computers in Human Behavior, 26*(5), 1128-1135.
- Coie, J. D., & Dodge, K. A. (1988). Multiple sources of data on social behavior and social status in the school: A cross-age comparison. *Child Development, 59*, 815-829.
- Crick, N. R., & Bigbee, M. A. (1998). Relational and overt forms of peer victimization: A multiinformant approach. *Journal of Consulting and Clinical Psychology, 66*, 337-347.
- Crick, N. R. & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Development, 67*(5), 2317-2327.
- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology, 8*(2), 367-380.
- David-Ferdon C. & Hertz M.F. (2007). Electronic media, violence and adolescents: an emerging public health problem. *Journal of Adolescent Health, 41*, 1-5.
- Dehue, F., Bolman, C., & Völlink, T. (2008). Cyberbullying: Youngsters' experiences and parental perception. *CyberPsychology & Behavior, 11*(2), 217-223.
- Dempsey, A. G., Sulkowski, M. L., Nichols, R., & Storch, E. A. (2009). Differences between peer victimization in cyber and physical settings and associated psychosocial adjustment in early adolescence. *Psychology in the Schools, 46*(10), 962-972.
- Dempsey, A. G., Haden, S. C., Goldman, J., Sivinski, J., & Wiens, B. A. (2011). Relational and overt victimization in middle and high schools: Associations with self-reported suicidality. *Journal of School Violence, 10*(4), 374-392.
- Dempsey, A. G., Sulkowski, M. L., Dempsey, J., & Storch, E. A. (2011). Has cyber technology produced a new group of peer aggressors? *Cyberpsychology, Behavior, and Social Networking, 14*(5), 297-302.
- Diamanduros, T., Downs, E., & Jenkins, S. J. (2008). The role of school psychologists in the assessment, prevention, and intervention of cyberbullying. *Psychology in the Schools, 45*(8), 693-704.

- Dodge, K. A. (1991). Emotion and social information processing. In J. Garber & K. A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (159-181). New York: Cambridge University Press.
- Dooley, J. J., Pyzalski, J., & Cross, D. (2009). Cyberbullying versus face-to-face bullying: A theoretical and conceptual review. *Journal of Psychology, 217*(4), 182–188.
- Espelage, D. L., Holt, M. K., & Henkel, R. R. (2003). Examination of peer group contextual effects on aggressive behavior during early adolescence. *Child Development, 74*, 205 – 220.
- Espelage, D. L., & Swearer, S. M. (2003). Research on school bullying and victimization: What have we learned and where do we go from here? *School Psychology Review, 32*(3), 365-383.
- Erdur-Baker, Ö. (2010). Cyberbullying and its correlation to traditional bullying, gender and frequent and risky usage of internet-mediated communication tools. *New Media & Society, 12*(1), 109-125.
- Erentaitė, R., Bergman, L. R., & Žukauskienė, R. (2012). Cross-contextual stability of bullying victimization: A person-oriented analysis of cyber and traditional bullying experiences among adolescents. *Scandinavian Journal of Psychology, 53*(2), 181-190.
- Farrington, D. P. (1993). Understanding and preventing bullying. In M. Tonry (Ed.), *Crime and justice Vol. 17* (381-458). Chicago: University of Chicago Press.
- Forero, R., McLellan, L., Rissel, C., & Bauman, A. (1999). Bullying behavior and psychosocial health among school students in New South Wales, Australia: Cross sectional survey. *British Medical Journal, 319*, 344–334.
- Galen, B. R., & Underwood, M. K. (1997). A developmental investigation of social aggression among children. *Developmental Psychology, 33*, 589–600.
- Goebert, D., Else, I., Matsu, C., Chung-Do, J., & Chang, J. Y. (2011). The impact of cyberbullying on substance use and mental health in a multiethnic sample. *Maternal and Child Health Journal, 15*(8), 1282-1286.
- Gradinger, P., Strohmeier, D., & Spiel, C. (2009). Traditional bullying and cyberbullying: Identification of risk groups for adjustment problems. *Zeitschrift Für Psychologie/Journal of Psychology, 217*(4), 205-213.

- Grills, A. E., & Ollendick, T. H. (2002). Peer victimization, global self-worth, and anxiety in middle school children. *Journal of Clinical Child & Adolescent Psychology, 31*, 59–68.
- Grottpeter, J. K., & Crick, N. R. (1996). Relational aggression, overt aggression, and friendship. *Child Development, 67*(5), 2328-2338.
- Harris, S., Petrie, G., & Willoughby, W. (2002). Bullying among 9th graders: An exploratory study. *National Association of Secondary School Principals. NASSP Bulletin, 86*, 3–14.
- Hawker, D. S. J., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychological maladjustment: A meta-analysis review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*, 441 – 445.
- Haynie, D.L., Nansel, T.R., Eitel, P., Davis Crump, A., Saylor, K., Yu, K., & Simons-Morton, B. (2001). Bullies, targets, and bully/victims: Distinct groups of youth at-risk. *Journal of Early Adolescence, 21*, 29–50.
- Hinduja, S., & Patchin, J. W. (2007). Offline consequences of online victimization: School violence and delinquency. *Journal of School Violence, 6*(3), 89-112.
- Hinduja, S., & Patchin, J. W. (2008). Cyberbullying: An exploratory analysis of factors related to offending and victimization. *Deviant Behavior, 29*(2), 129-156.
- Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research, 14*(3), 206-221
- Hoover, J., & Stenhjem, P. (2003). Bullying and teasing of youth with disabilities: Creating positive school environments for effective inclusion. *Examining Current Challenges in Secondary Education and Transition, 2*(3). Retrieved from <http://www.ncset.org/publications/printresource.asp?id=1332>
- Huang, Y., & Chou, C. (2010). An analysis of multiple factors of cyberbullying among junior high school students in taiwan. *Computers in Human Behavior, 26*(6), 1581-1590.
- Hudson, J. (2010) Gay teen suicide sparks debate over cyber bullying. *The Atlantic Wire*. Retrieved from: <http://www.theatlanticwire.com/national/2010/10/gay-teen-suicide-sparks-debate-over-cyber-bullying/22829/>
- Hull, J. G. (1981). A self-awareness model of the causes and effects of alcohol consumption. *Journal of Abnormal Psychology, 90*, 586-600.
- Juvonen, J., & Graham, S. (2001). Peer harassment in school: The plight of the vulnerable and victimized. New York: Guilford Press.

- Juvonen, F. & Gross, E.F. (2008). Extending the school grounds?- Bullying in cyberspace. *Journal of School Health*, 78(9), 496-505.
- Kaltiala-Heino, R., Rimpela, M., Marttunen, M., Rimpela, A., & Rantanen, P. (1999). Bullying, depression, and suicidal ideation in Finnish adolescents: School survey. *British Medical Journal*, 319, 348-351.
- Kiesler S., Siegel J., & McGuire, T.W. (1984). Social psychological aspects of computer-mediated communication. *American Psychologist*, 39, 1123–1132.
- Kim Y.S., Leventhal, B.L., Koh, Y.J., Hubbard A., & Boyce W.T. (2006) School bullying and youth violence: causes or consequences of psychopathologic behavior? *Archives of General Psychiatry*, 63(9), 1035-1041.
- Kiriakidis, S. P., & Kavoura, A. (2010). Cyberbullying: A review of the literature on harassment through the internet and other electronic means. *Family & Community Health: The Journal of Health Promotion & Maintenance*, 33(2), 82-93.
- Klomek, A. B., Sourander, A., & Gould, M. (2010). The association of suicide and bullying in childhood to young adulthood: A review of cross-sectional and longitudinal research findings. *The Canadian Journal of Psychiatry / La Revue Canadienne De Psychiatrie*, 55(5), 282-288.
- Kochenderfer-Ladd, B., & Skinner, K. (2002). Children's coping strategies: Moderators of the effects of peer victimization? *Developmental Psychology*, 38, 267–278.
- Kowalski, R., Limber, S. P., & Agatston, P. W. (2008). *Cyberbullying*. Malden, MA: Blackwell.
- Kowalski R.M. & Limber S.P. (2007) Electronic bullying among middle school students. *Journal of Adolescent Health*, 41, 22–30.
- Kraft, E. (2006). Cyberbullying: A worldwide trend of misusing technology to harass others. *WIT Transactions on Information and Communication Technologies*, 36, 155-166.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological wellbeing? *American Psychologist*, 53(9), 1017 – 1031.
- Kumpulainen, K., Rasanen, E., Henttonen, I., Almqvist, F., Kresanov, K., & Linna, S. L. (1998). Bullying and psychiatric symptoms among elementary school-age children. *Child Abuse and Neglect*, 22, 705-717.

- Kumpulainen, K., & Räsänen, E. (2002). Symptoms and deviant behavior among eight-year-olds as predictors of referral for psychiatric evaluation by age 12. *Psychiatric Services, 53*(2), 201-206.
- Lagerspetz, K. M. J., Bjorkqvist, K. and Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-years-old children. *Aggressive Behavior, 14*, 403-414.
- Law, D. M., Shapka, J. D., Hymel, S., Olson, B. F., & Waterhouse, T. (2012). The changing face of bullying: An empirical comparison between traditional and internet bullying and victimization. *Computers in Human Behavior, 28*(1), 226-232.
- Li, Q. (2006). Cyberbullying in schools: A research of gender differences. *School Psychology International, 27*(2), 157-170.
- Li, Q. (2007). New bottle but old wine: A research of cyberbullying in schools. *Computers in Human Behavior, 23*(4), 1777-1791.
- Li, Q. (2008). A cross-cultural comparison of adolescents' experience related to cyberbullying. *Educational Research, 50*(3), 223-234.
- Li, Q. (2010). Cyberbullying in high schools: A study of students' behaviors and beliefs about this new phenomenon. *Journal of Aggression, Maltreatment & Trauma, 19*(4), 372-392.
- Limber, S. P. (2002). *Bullying among children and youth*. Presented at the Educational Forum on Adolescent Health: Youth Bullying, Chicago: American Medical Association. Retrieved from www.ama-assn.org/ama1/pub/upload/mm/39/youthbullying.pdf
- Loeber, R., & Dishion, T. (1984). Early predictors of male delinquency: A review. *Psychological Bulletin, 94*, 68-99.
- Magnusson, D., Statten, H., & Duner, A. (1983). Aggression and criminality in a longitudinal perspective. In K.T. Van Dusen & S.A. Mednick (Eds.), *Prospective studies of crime and delinquency* (277-301). Netherlands: Kluwer Nijoff.
- Mason, K. L. (2008). Cyberbullying: A preliminary assessment for school personnel. *Psychology in the Schools, 45*(4), 323-348.
- McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications for personality and social psychology. *Personality and Social Psychology Review, 4*(1), 57-75.

- McNamara, B, McNamara, E (1997). *Keys to dealing with bullies*. Hauppauge, NY: Barron's.
- Menesini, E. & Nocentini, A. (2009). Cyberbullying definition and measurement: Some critical considerations. *Zeitschrift fur Psychologie/Journal of Psychology*, 217(4), 230–232.
- Menesini, E., Nocentini, A., & Calussi, P. (2011). The measurement of cyberbullying: Dimensional structure and relative item severity and discrimination. *Cyberpsychology, Behavior, and Social Networking*, 14(5), 267-274.
- Mesch, G. S. (2009). Parental mediation, online activities, and cyberbullying. *CyberPsychology & Behavior*, 12(4), 387-393.
- Nansel, T.R., Haynie, D.L., & Simons-Morton, B.G. (2003) The association of bullying and victimization with middle school adjustment. *Journal of Applied School Psychology*, 19 (2), 45-61.
- Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, 285, 2094-2100.
- Nansel, T. R., Craig, W., Overpeck, M. D., Saluja, G., & Ruan, W. J. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatrics & Adolescent Medicine*, 158, 730-736.
- Olweus, D. 1978. *Aggression in the schools. Bullies and whipping boys*. Washington, DC: Hemisphere Press (Wiley).
- Olweus D. (1993). *Bullying at school what we know and what we can do*. Cambridge, MA: Blackwell.
- Olweus, D. (1994). Bullying at school: Basic facts and effects of a school based intervention program. *Journal of Child Psychology and Psychiatry*, 35, 1171–1190.
- Olweus, D. (1999). Sweden. In P. K. Smith, Y. Morita, J. Junger-Tas, D. Olweus, R. Catalano & P. Slee (Eds.), *The nature of schoolbullying: A cross-national perspective* (7–27). London: Routledge.
- Olweus, D. (2001). *Olweus' core program against bullying and antisocial behavior: A teacher handbook*. Bergen, Norway: Author.

- Olweus, D., Limber S., and Mihalic S. (1999). *Bullying Prevention Program*. Boulder: Center for the Study and Prevention of Violence.
- Olweus, D. (2007) *The Olweus bullying questionnaire and standard school report*. Center City, MN: Hazelden.
- O'Moore A.M., Kirkham C., & Smith M.. (1997). Bullying behavior in Irish schools: A nationwide study. *Irish Journal of Psychology*, *18*, 141–169.
- Owens L., Shute R., Slee P. (2000) “Guess what I just heard!”: Indirect aggression among teenage girls in Australia. *Aggressive Behavior*, *26*, 67–83.
- Patchin, J. W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice*, *4*(2), 148-169.
- Paulson A. (2003) Internet bullying. *Christian Science Monitor*. Retrieved from www.csmonitor.com/2003/1230/p11s01-legn.htm
- Pearce, N., Cross, D., Monks, H., Waters, S., & Falconer, S. (2011). Current evidence of best practice in whole-school bullying intervention and its potential to inform cyberbullying interventions. *Australian Journal of Guidance and Counselling*, *21*(1), 1-21.
- Pellegrini, A.D. (1998). Bullies and victims in school: A review and call for research. *Journal of Applied Developmental Psychology*, *19*, 165–176.
- Postmes, T., Spears, R., & Lea, M. (1998). Breaching or building social boundaries? SIDE-effects of computer mediated communication. *Communication Research*, *25*, 689–715.
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social–psychological adjustment of aggressors and victims. *Journal of Clinical Child Psychology*, *30*(4), 479-491.
- Putallaz, M., Grimes, C. L., Foster, K. J., Kupersmidt, J. B., Coie, J. D., & Dearing, K. (2007). Overt and relational aggression and victimization: Multiple perspectives within the school setting. *Journal of School Psychology*, *45*(5), 523-547.
- Raskauskas, J. & Stoltz, A.D. (2007). Involvement in traditional and electronic bullying among adolescents. *Developmental Psychology*, *43*(3), 564-577.
- Rigby, K. (1993). School children’s perceptions of their families and caregivers as a function of peer relationships. *Journal of Genetic Psychology*, *154*(4), 501–513.
- Rigby, K. (1996). *Bullying in schools and what to do about it*. London: Jessica Kingsley.

- Rivers, I., & Smith, P. K. (1994). Types of bullying behaviour and their correlates. *Aggressive Behavior*, 20(5), 359-368.
- Salmivalli, C., Kaukiainen, A., & Lagerspetz K. (2000) Aggression and sociometric status among peers: Do gender and type of aggression matter? *Scandinavian Journal of Psychology*, 41, 17-24
- Scheithauer, H., Hayer, T., Petermann, F., & Jugert, G. (2006). Physical, verbal, and relational forms of bullying among german students: Age trends, gender differences, and correlates. *Aggressive Behavior*, 32(3), 261-275.
- Schenk, A. M., & Fremouw, W. J. (2012). Prevalence, psychological impact, and coping of cyberbully victims among college students. *Journal of School Violence*, 11(1), 21-37.
- Schneider, S.K., O'Donnell, L., Stueve, A. & Coulter, R.W.S (2012). Cyberbullying, School Bullying, and Psychological Distress: A regional census of high school students. *American Journal of Public Health*, 102(1), 171-177.
- Slonje, R., & Smith, P. K. (2008). Cyberbullying: Another main type of bullying? *Scandinavian Journal of Psychology*, 49(2), 147-154.
- Slonje, R., Smith, P. K., & Frisén, A. (2012). Processes of cyberbullying, and feelings of remorse by bullies: A pilot study. *European Journal of Developmental Psychology*, 9(2), 244-259.
- Smart, R., & Walsh, G. (1993). Predictors of depression in street youth. *Adolescence*, 28, 41-53.
- Smith P.K., Cowie H, Olafsson RF, & Liefhoghe, A.P.D. (2002). Definitions of bullying: A comparison of terms used, and age and gender differences, in a fourteen-country international comparison. *Child Development*, 73, 1119–1133.
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4), 376-385.
- Smith, P. K. and Sharp, S. (1994). *School bullying: Insights and perspectives*. London: Routledge.
- Sourander, A., Klomek, A. B., Ikonen, M., Lindroos, J., Luntamo, T., Koskelainen, M., Helenius, H. (2010). Psychosocial risk factors associated with cyberbullying among adolescents: A population-based study. *Archives of General Psychiatry*, 67(7), 720-728.

- Spears R., Postmes T., Lea M., & Wolbert A. (2002). When are net effects gross products? The power of influence and the influence of power in computer-mediated communication. *Journal of Social Issues*, 58, 91–107.
- Striegel-Moore, R., Dohm, F., Pike, K. M., Wilfley, D. E., & Fairburn, C. G. (2003). Abuse, bullying, and discrimination as risk factors for binge eating disorder. *The American Journal of Psychiatry*, 159(11), 1902-1907.
- Strom P.S., & Strom R.D.. Cyberbullying by adolescents: a preliminary assessment. *The Educational Forum*, 70, 21–36.
- Suler, J. (2004). The online disinhibition effect. *CyberPsychology & Behavior*, 7, 321-326.
- Taylor, C. (2013)'Star Wars Kid' blasts bullies, Jedi Knights defend him. *Mashable*. Retrieved from: <http://mashable.com/2013/05/10/star-wars-kid-interview-cyberbullying/>
- Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, 26(3), 277-287.
- Terranova, A. M., Morris, A. S., & Boxer, P. (2008). Fear reactivity and effortful control in overt and relational bullying: A six-month longitudinal study. *Aggressive Behavior*, 34(1), 104-115.
- Topçu, Ç., Erdur-Baker, Ö., & Çapa-Aydin, Y. (2008). Examination of cyberbullying experiences among turkish students from different school types. *CyberPsychology & Behavior*, 11(6), 643-648.
- Twyman, K., Saylor, C., Taylor, L. A., & Comeaux, C. (2010). Comparing children and adolescents engaged in cyberbullying to matched peers. *Cyberpsychology, Behavior, and Social Networking*, 13(2), 195-199.
- Vaillancourt, T., McDougall, P., Hymel, S., Krygsman, A., Miller, J., Stiver, K., et al. (2008). Bullying: Are researchers and children/youth talking about the same thing? *International Journal of Behavioral Development*, 32(6), 486–495.
- Vandebosch, H., & Van Cleemput, K. (2009). Cyberbullying among youngsters: Profiles of bullies and victims. *New Media & Society*, 11(8), 1349-1371.
- Van der Wal, M. F., de Wit, C. A. M., & Hirasing, R. A. (2003). Psychosocial health among young victims and offenders of direct and indirect bullying. *Pediatrics*, 111, 1312-1317.

- Vazsonyi, A. T., Machackova, H., Sevcikova, A., Smahel, D., & Cerna, A. (2012). Cyberbullying in context: Direct and indirect effects by low self-control across 25 European countries. *European Journal of Developmental Psychology, 9*(2), 210-227.
- Wade, A., & Beran, T. (2011). Cyberbullying: The new era of bullying. *Canadian Journal of School Psychology, 26*(1), 44-61.
- Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *Journal of Adolescent Health, 45*(4), 368-375.
- Whitney, I., Rivers, I., Smith, P., & Sharp, S. (1994). The Sheffield project: Methodology and findings. In P. Smith & S. Sharp (Eds.), *School bullying: Insights and perspectives* (20-56). London: Routledge.
- Whitney I, & Smith P.K. 1993. A survey of the nature and extent of bullying in junior/middle and secondary schools. *Educational Resources, 35*:3–25.
- Willard, N. E. (2007). *Cyberbullying and cyberthreats: Responding to the challenge of online social aggression, threats, and distress*. Champaign, IL: Research Press.
- Williams K.R., & Guerra N.G. (2007). Prevalence and predictors of internet bullying. *Journal of Adolescent Health, 41*, 14–21.
- Wolak J., Mitchell K.J., & Finkelhor D. (2007). Does online harassment constitute bullying? An exploration of online harassment by known peers and online-only contacts. *Journal of Adolescent Health, 41*, 51–58.
- Wolke D, Stanford K. (1999). Bullying in school children. In: D. Messar & S. Millar (Eds.): *Exploring Developmental Psychology: From Infancy to Adolescence* (341-360). London: Arnold.
- Wolke, D., Woods, S. & Samara, M. (2009). Who escapes or remains a victim of bullying in primary school? *British Journal of Developmental Psychology, 27*, 835–851.
- Xie, H., Cairns, R. B., & Cairns, B. D. (2002). The development of social aggression and physical aggression: A narrative analysis of interpersonal conflicts. *Aggressive Behavior, 28*(5), 341-355.
- Ybarra, M. L. (2004). Linkages between depressive symptomatology and internet harassment among young regular internet users. *CyberPsychology & Behavior, 7*(2), 247-257.

- Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in Internet harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health, 41*, S42-S50.
- Ybarra, M. L., & Mitchell, K. J. (2004). Online aggressor/targets, aggressors, and targets: A comparison of associated youth characteristics. *Journal of Child Psychology and Psychiatry, 45*(7), 1308-1316.
- Ybarra, M. L., & Mitchell, K. J. (2004). Youth engaging in online harassment: Associations with caregiver-child relationships, internet use, and personal characteristics. *Journal of Adolescence, 27*(3), 319-336.
- Ybarra, M. L., Boyd, D., Korchmaros, J. D., & Oppenheim, J. (. (2012). Defining and measuring cyberbullying within the larger context of bullying victimization. *Journal of Adolescent Health, 51*(1), 53-58.
- Yilmaz, H. (2011). Cyberbullying in turkish middle schools: An exploratory study. *School Psychology International, 32*(6), 645-654.
- Yoon, J., & Tairiol, J. (2009, April). *Communication technology and cyber bullying among young adolescents*. Poster symposium presentation at the biennial conference of the Society for Research on Child Development, Denver, CO.
- Zimbardo, P. G. (1970). The human choice: Individuation, reason, and order vs. deindividuation, impulse and chaos. In W. J. Arnold & D. Levine (Eds.), *Nebraska symposium on motivation* (237 – 307). Lincoln: University of Nebraska Press.

APPENDIX A
QUESTIONNAIRES

Revised Questionnaire

Please answer honestly the following questions by bubbling in the appropriate answer on the SCANTRON.

Please **DO NOT WRITE YOUR NAME ON THIS SHEET OR THE SCANTRON.**

This survey is completely ANONYMOUS – NOBODY WILL EVER KNOW WHO YOU ARE. Your answers will be **TOTALLY PRIVATE.**

SECTION I.

- 1.) Are you:
 - a) male
 - b) female
- 2) How old are you?
 - a) 11
 - b) 12
 - c) 13
 - d) 14
 - e) 15
- 3) How would you describe your ethnicity?
 - a) Hispanic/Latino(a)
 - b) Asian
 - c) Black or African American
 - d) Other
 - e) White

On the SCANTRON, use this scale to mark the response that best shows how much time you spend in a typical week doing the following activities:

If you've never heard of something, please mark the answer "none at all"

A-----B-----C-----D-----E
more than 3 hours 2 to 3 hours 1 to 2 hours between 1 minute and 1 hour none

In a typical week, about how much time do you spend:

4. talking on a cell-phone?
5. sending texts?
6. browsing the Internet?
7. sending e-mails?
8. using chat rooms?
9. using messenger?

10. using social media like Facebook?

SECTION II.

For questions 11 – 29 use the following scale to indicate how often you have experienced, or have engaged in, the described behaviors in the past 12 months. Bubble in the response on the answer sheet that best describes the frequency of the acts.

A-----B-----C-----D-----E
More than 10 times 5 to 10 times 2 to 5 times once or twice Never

* If you've never heard of something, please mark the answer "never"

Sometimes people say or do bad things to one another using technology or social media (such as texting, emails, messaging, and posting to Facebook, Instagram etc.). The following questions ask about the bad things that might have been done to you. All responses will be kept completely anonymous.

11. How often has someone sent you a text message or instant message that was mean or threatened you?
12. How often has someone posted a comment on your social website (like Facebook) that was mean or threatened you?
13. How often has a student sent you an email that was mean or threatened you?
14. How often has someone posted online to a webpage mean or embarrassing photos of you?

The following questions ask about things you might have done.

15. How often have you called someone mean names by using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to make them feel bad?
16. How often have you teased someone in a hurtful way with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram etc.)?
17. How often have you made fun of someone directly to them in order to hurt their feelings with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
18. How often have you spread rumors about someone by using technology or social media (such as texts, emails, messaging or by posting to Facebook, Instagram, etc.) so that other people wouldn't like them?

19. How often have you made fun of someone behind their back using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
20. How often have you ignored someone online to hurt their feelings?
21. How often have you excluded someone from an online group or activity?
22. How often have you used technology or social media (texts, emails, messaging, Facebook, Instagram, etc.) to try to get others to exclude someone you don't like?
23. How often have you threatened someone using technology or social media (texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
24. How often have you sent someone a picture or video to threaten them or embarrass them by using a social media on a computer?
25. How often have you sent someone a picture or video to threaten or embarrass them by using a cell phone?
26. How often have you spread around an embarrassing picture or video of someone by using social media on the Internet?
27. How often have you spread around an embarrassing picture of someone by using a cell phone?
28. How often have you pretended to be another person when online to make that person look bad?
29. How often have you revealed information using social media about a person that they didn't want people to know about?

SECTION III.

For items 30-43 use the following scale to indicate how often you have done, or have experienced, the described behaviors in the past year (12 months). Bubble in the response on the answer sheet that best describes the frequency of the acts.

A-----B-----C-----D-----E
 More than 10 times 5 to 10 times 2 to 5 times once or twice Never

Sometimes people say or do bad things to one another in general. Please answer the following questions honestly. All responses will be kept completely anonymous.

30. How often have you punched, kicked, or shoved another student in a mean way?

31. How often have you done something to embarrass or humiliate someone in front of other people?
32. How often have you forced someone do something they didn't want to do?
33. How often have you taken away, stolen, or otherwise damaged somebody else's property?
34. How often have you called someone mean names to make them feel bad?
35. How often have you teased someone in a hurtful way?
36. How often have you made fun of someone to make them feel bad?
37. How often have you spread rumors about someone whether they were true or not so people wouldn't like them?
38. How often have you made fun of someone behind their back so that people wouldn't like them?
39. How often have you excluded another student from a group to make them feel bad?
40. How often have you tried to get others to exclude someone to hurt that person's feelings?
41. How often have you ignored someone to hurt their feelings?
42. How often have you done something bad to someone using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to get back at them for something they did to you in the real world?
43. How often have you done something bad to someone using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to get back at them for something they did to you online?

Original Questionnaire

Please answer honestly the following questions by bubbling in the appropriate answer on the GENERAL PURPOSE DATA SHEET.

Please do not write your name on this form.

This survey is completely anonymous. Your answers will be used for nothing other than research purposes.

SECTION I.

1.) Are you:

- a) male
- b) female

2) How old are you?

- a) 11
- b) 12
- c) 13
- d) 14
- e) 15

3) How would you describe your ethnicity?

- f) Hispanic/Latino(a)
- g) American Indian or Alaskan Native
- h) Asian
- i) Black or African American
- j) Native Hawaiian or Other Pacific Islander
- k) Two or more races
- l) White

On the GENERAL PURPOSE DATA SHEET, use this scale to mark the response that best shows how much time you spend in a typical week doing the following activities:

If you've never heard of something, please mark the answer "none at all"

A-----B-----C-----D-----E
more than 3 hours 2 to 3 hours 1 to 2 hours between 1 minute and 1 hour none

In a typical week, about how much time do you spend:

- 4. talking on a cell-phone?
- 5. sending texts?
- 6. browsing the Internet?
- 7. sending e-mails?
- 8. using chat rooms?
- 9. using messenger?
- 10. using social media like Facebook?

SECTION II.

Use the following scale to indicate how often you have experienced, or have engaged in, the described behaviors in the past 12 months. Bubble in the response on the answer sheet that best describes the frequency of the acts.

A-----B-----C-----D-----E
More than 10 times maybe 5 to 10 times maybe 2 to 5 times maybe once or twice Never
* If you've never heard of something, please mark the answer "never"

Sometimes people say or do bad things to one another using technology or social media (such as texting, emails, messaging, and posting to Facebook, Instagram etc.). The following questions ask about the bad things that might have been done to you.

All responses will be kept completely anonymous.

- 11 How often has someone sent you a text message or instant message that was mean or threatened you?
- 12 How often has someone posted a comment on your personal website that was mean or threatened you?
13. How often has a student sent you an email that was mean or threatened you?
14. How often has someone posted online to a webpage mean or embarrassing photos of you?
The following questions ask about things you might have done.
- 15 How often have you called someone mean names by using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to make them feel bad?
- 16 How often have you teased someone in a hurtful way with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram etc.)?
- 17 How often have you made fun of someone directly to them in order to hurt their feelings with technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
- 18 How often have you spread rumors about someone by using technology or social media (such as texts, emails, messaging or by posting to Facebook, Instagram, etc.) so that other people wouldn't like them?
- 19 How often have you made fun of someone behind their back using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
- 20 How often have you ignored someone online to hurt their feelings?

- 21 How often have you excluded someone from an online group or activity?
- 22 How often have you used technology or social media (texts, emails, messaging, Facebook, Instagram, etc.) to try to get others to exclude someone you don't like?
- 23 How often have you threatened someone using technology or social media (texts, emails, messaging, or by posting to Facebook, Instagram, etc.)?
- 24 How often have you sent someone a picture or video to threaten them or embarrass them by using a social media on a computer?
- 25 How often have you sent someone a picture or video to threaten or embarrass them by using a cell phone?
- 26 How often have you spread around an embarrassing picture or video of someone by using social media on the Internet?
- 27 How often have you spread around an embarrassing picture of someone by using a cell phone?
- 28 How often have you pretended to be another person when online to make that person look bad?
- 29 How often have you revealed information using social media about a person that they didn't want people to know about?

SECTION III.

Use the following scale to indicate how often you have done, or have experienced, the described behaviors in the past year (12 months). Bubble in the response on the answer sheet that best describes the frequency of the acts.

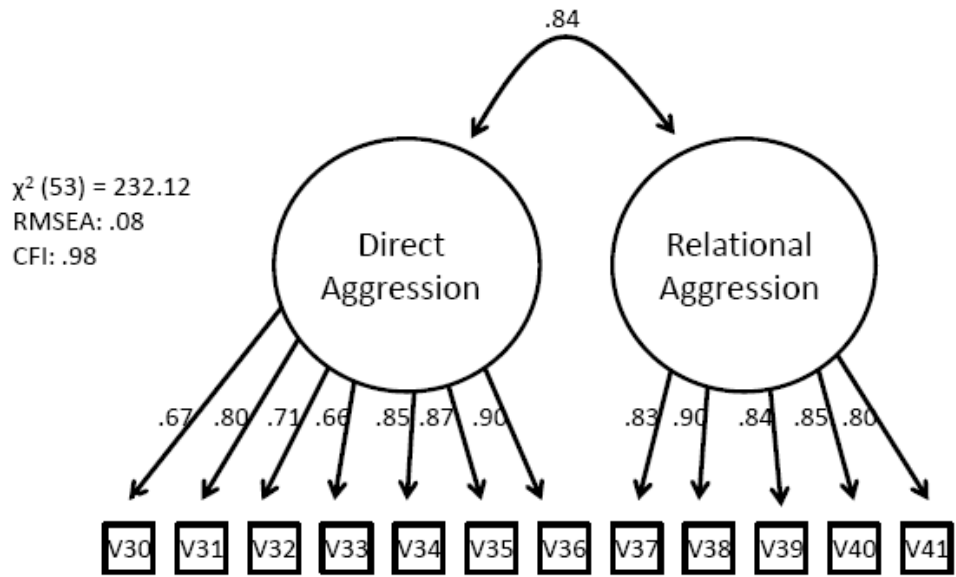
A-----B-----C-----D-----E
 More than 10 times maybe 5 to 10 times maybe 2 to 5 times maybe once or twice Never

Sometimes people say or do bad things to one another in general. Please answer the following questions honestly. All responses will be kept completely anonymous.

- 30 How often have you punched, kicked, or shoved another student in a mean way?
- 31 How often have you done something to embarrass or humiliate someone in front of other people?
- 32 How often have you forced someone do something they didn't want to do?

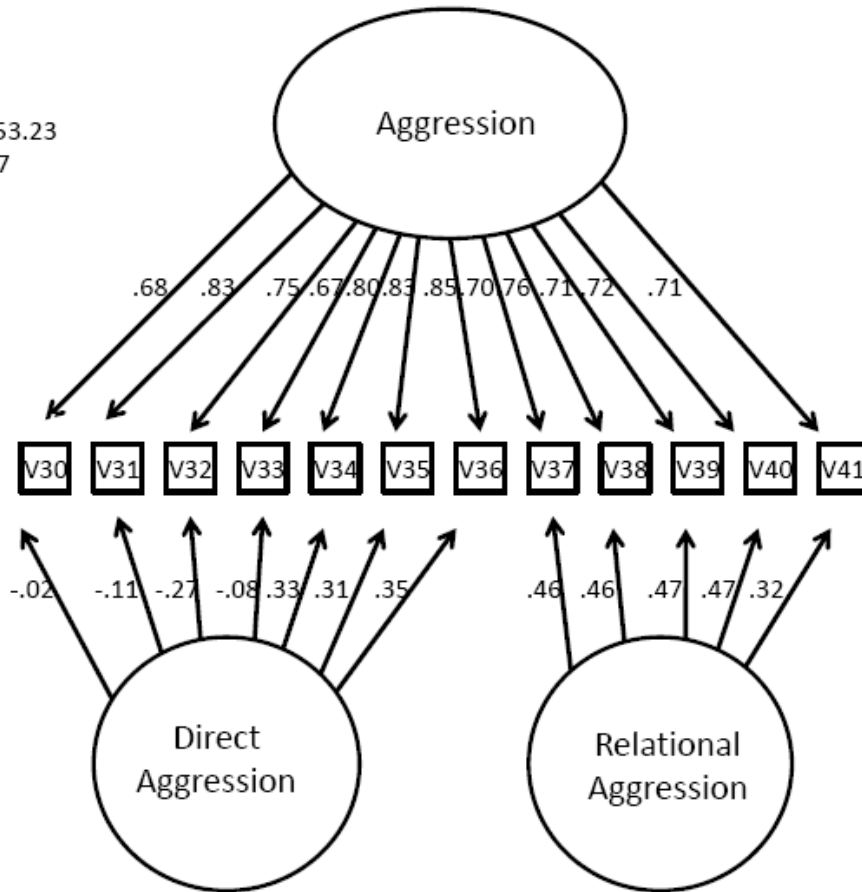
- 33 How often have you taken away, stolen, or otherwise damaged somebody else's property?**
- 34 How often have you called someone mean names to make them feel bad?**
- 35 How often have you teased someone in a hurtful way?**
- 36 How often have you made fun of someone to make them feel bad?**
- 37 How often have you spread rumors about someone whether they were true or not so people wouldn't like them?**
- 38 How often have you made fun of someone behind their back so that people wouldn't like them?**
- 39 How often have you excluded another student from a group to make them feel bad?**
- 40 How often have you tried to get others to exclude someone to hurt that person's feelings?**
- 41 How often have you ignored someone to hurt their feelings?**
- 42 How often have you done something bad to someone using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to get back at them for something they did to you in the real world?**
- 43 How often have you done something bad to someone using technology or social media (such as texts, emails, messaging, or by posting to Facebook, Instagram, etc.) to get back at them for something they did to you online?**

APPENDIX B
OTHER FIGURES

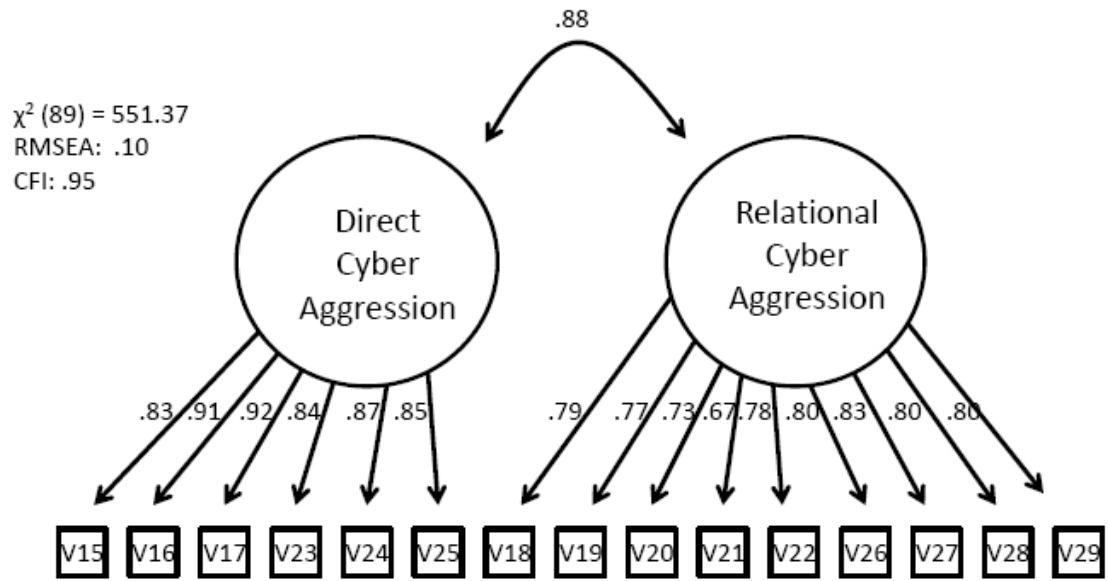


Correlated two factor aggression model: Overt and relational aggression

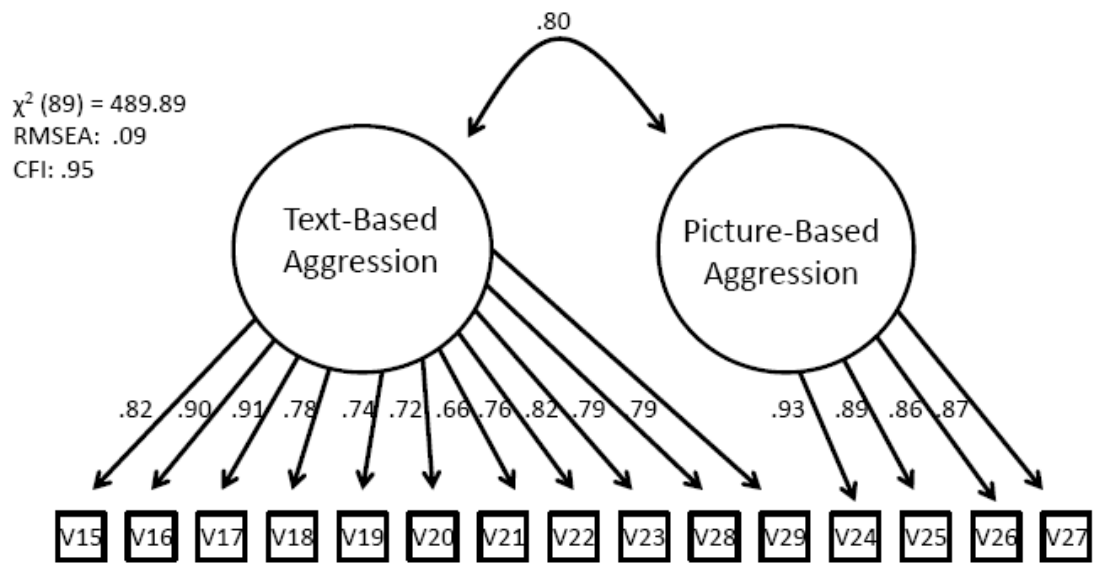
$\chi^2 (42) = 153.23$
RMSEA: .07
CFI: .99



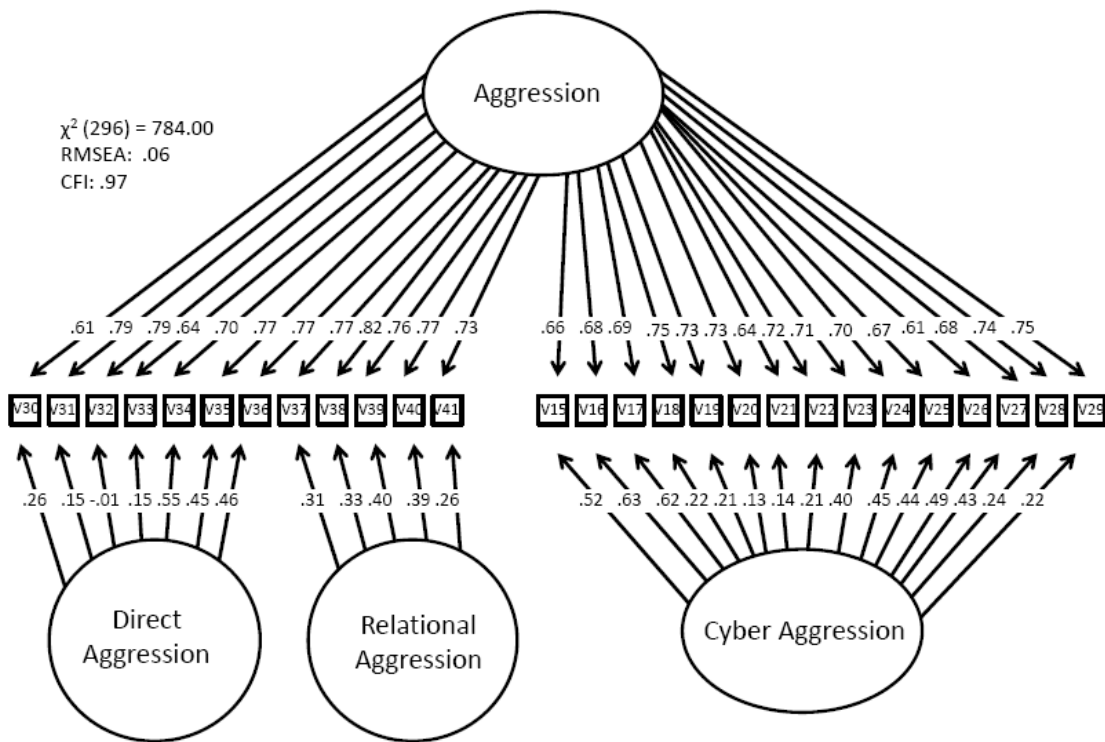
Bi-factor model for general aggression with two group factors: Overt and relational aggression.



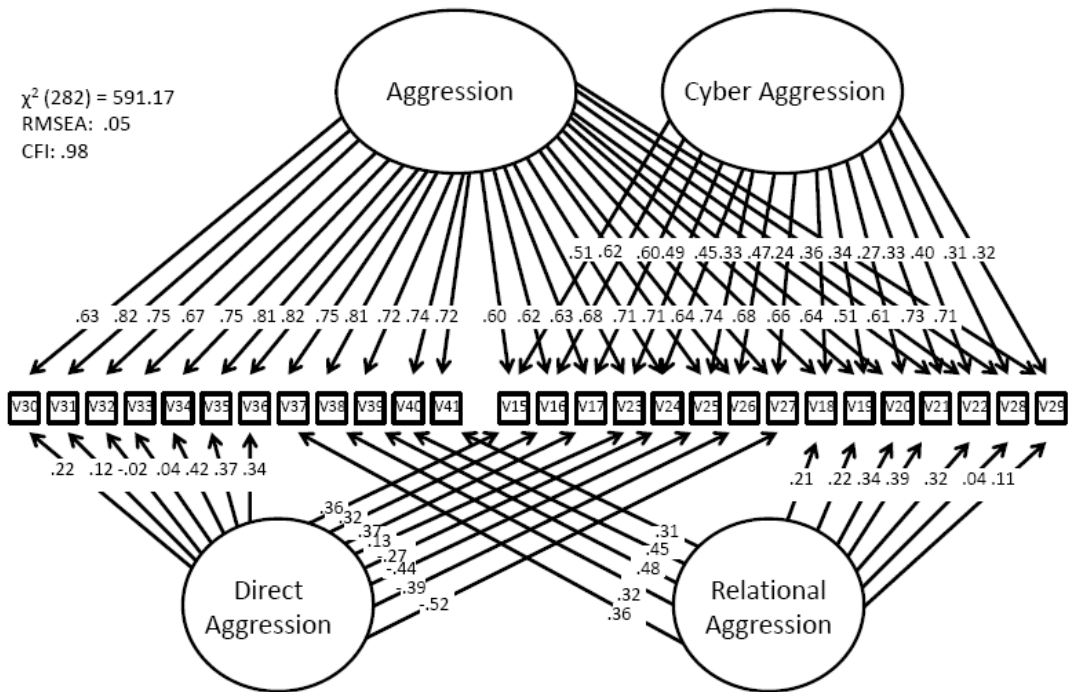
Two dimensional cyber aggression model: Overt and relational.



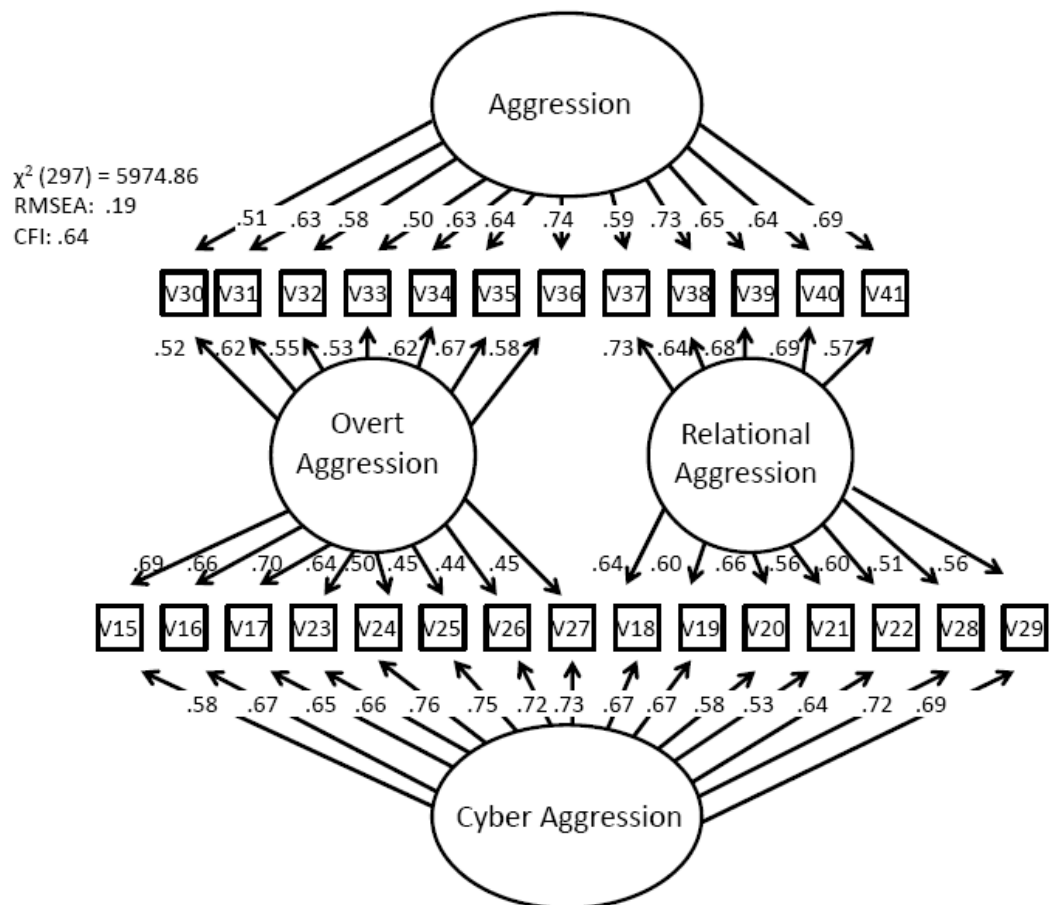
Two dimensional cyber aggression model: Text and Picture-Based Aggression.



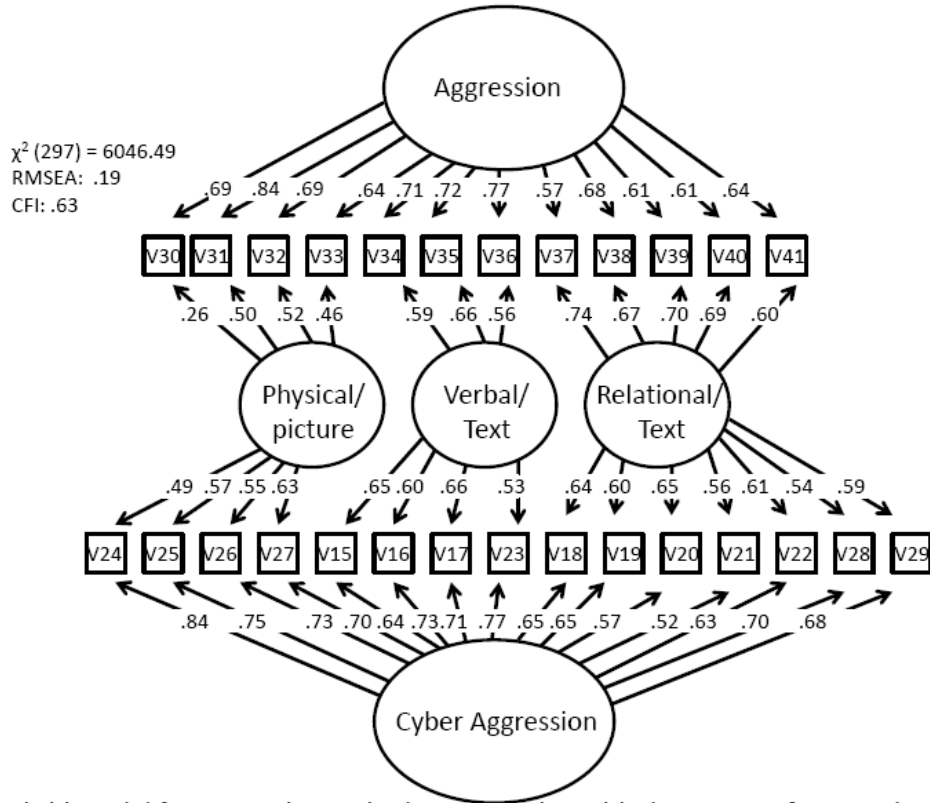
Bi-factor model for aggression with three group factors: Overt, relational, and cyber aggression.



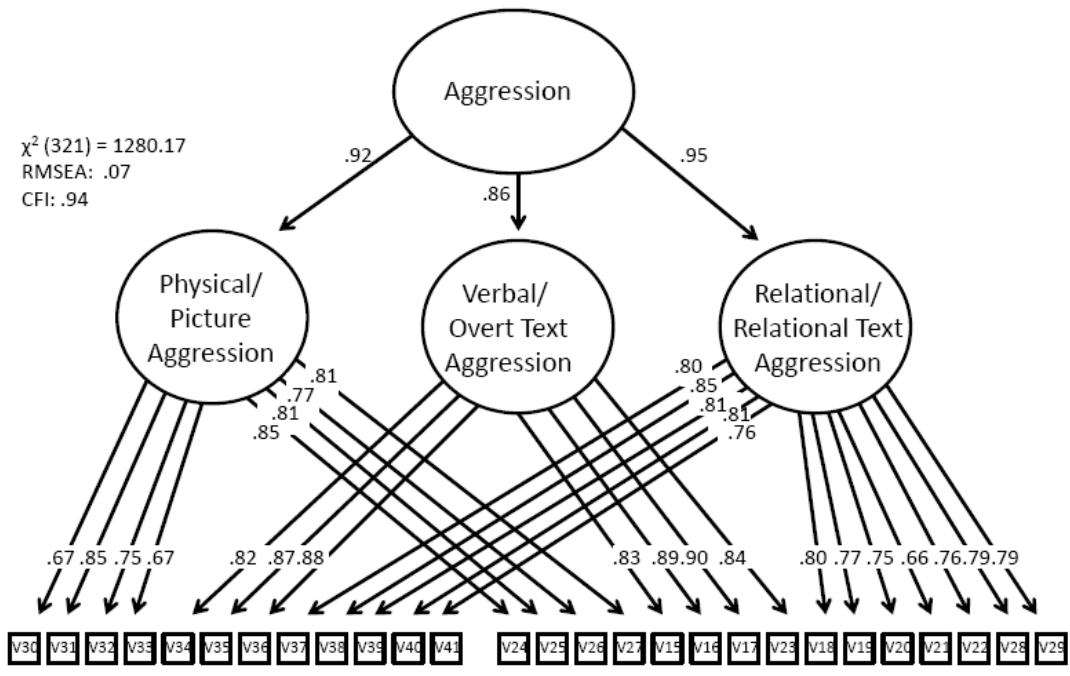
Bi-factor model for aggression and cyber aggression with two group factors: Overt aggression and relational aggression.



Hybrid model for aggression and cyber aggression with two group factors: Overt and relational aggression.



Hybrid model for aggression and cyber aggression with three group factors: Picture-based/physical, verbal/text-based, and relational/text-based aggression.



Combined hierarchical model for aggression and cyber aggression with three group factors: Picture-based/physical, verbal/text-based, and relational/text-based aggression.

159APPENDIX C

CONSENT AND ASSENT FORMS

PARENTAL LETTER OF PERMISSION

Dear Parent:

My name is Keri Nuckles, and I am the principal of Northlawn Junior High School. We are conducting a research study in partnership with researchers from ASU to gain better insight into children's behavior regarding the Internet, cell phone use, and other related electronic media. We are exploring the prevalence of cyberbullying in particular.

I am inviting your child's participation, which will involve responding to several questions on a survey which will be administered at school. Answering the questions will take about 15 to 30 minutes. Your child's participation in this study is voluntary. If you choose not to have your child participate, there will be no penalty (it will not affect your child's grade). Likewise, if your child chooses not to participate or to withdraw from the study at any time, there will be no penalty. The surveys will be completed entirely anonymously - the result of the research study may be published, but your child's name will never be used.

Although there may be no direct benefit to your child, a possible benefit is that by answering the questions your child may gain a better understanding of his/her own Internet behavior as well bring consciousness in the school to behavior related to electronic media. There are no foreseeable risks or discomforts to your child's participation.

All responses will be confidential. All surveys will be completed entirely anonymously.

The results of this study may be used in reports, presentations, or publications, but your child's name will not be known or used.

If you have any questions concerning the research study or your child's participation in the study, please call me at (815) 672-4558.

Sincerely,

Keri Nuckles

IF YOU **DO NOT** WANT YOUR CHILD TO PARTICIPATE SIGN BELOW

Signature _____ Printed Name _____ Date _____

By signing, you are NOT giving consent for your child _____ to participate.

If you have any questions about you or your child's rights as a subject/participant in this research, or if you feel your child has been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the Office of Research Integrity and Assurance, at (480) 965-6788.

ASU IRB Approved	
Sign	SM
Date	11/2/12 - 11/1/13

CHILD ASSENT

Internet Behavior Survey

I have been informed that my parent(s) have not indicated that they would be opposed me participating in a study concerning the Internet, cell phones, and text messaging. In particular, this study is looking into cyberbullying. I will be asked to complete a survey using a computer. The survey should take only 15 to 30 minutes.

My participation in this project is voluntary, and I have been told that I may stop my participation in this study at any time. If I choose not to participate, it will not affect my grade in any way.

If you have any questions, you may ask at any time.

Different people may have very different answers. There is no right or wrong answer to any of the questions and you may stop at any time if you don't want to answer any more questions. You will not write your name on the survey, and no one will ever know your answers to the questions, not even you teachers, your parents, or you friends. Your answers are totally private.

If you would not like to participate you may turn off your monitor.

ASU IRB Approved	
Sign	<u>SM</u>
Date	<u>11/2/12 - 11/1/13</u>